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ABSTRACT

Viewpoints of an audiologist, speech-language pathologist, special educator, classroom teacher, and parent are presented in the book on the implications of P.L. 94-142, the Education for All Handicapped Children Act, for hard of hearing students. In the introduction, M. Ross considers the status of many hard of hearing students, noting the importance of early detection. A. Maxon reviews "Audiological Assessment and Management" and makes a case for the involvement of the public school audiologist. "Assessment and Management of the Preschool Child" by V. Jury discusses evaluation as well as types of nursery school placement. D. Brackett ("Assessment: Adaptations, Interpretations, and Implications") describes components of a comprehensive evaluation. Considered in "Psychosocial Considerations and Evaluation" (J. Davis) are personality characteristics and social development. D. Meltzer ("The Parents as Consumers") recounts his role in making educational decisions about his hard of hearing junior high school aged daughter. M. Teitelbaum discusses "Teachers as Consumers--What They Should Know About the Hearing Impaired Child." The issue of individualized education programs (IEPs) is addressed by L. Nober in "Developing IEP's for Hard of Hearing Children." M. Ross summarizes the other presentations and comments upon such topics as auditory and visual dependence, psychosocial adjustment, and speech reading and auditory training. (CL)

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2 SPECIAL EDUCATION IN TRANSITION

Educating Hard of Hearing Children

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Special Education in Transition

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About the Series

In response to important new social and educational policies, as expressed in Public Law 94-142, for example, the field of special education is in a period of very rapid change. In general, the change is in the direction of more inclusive arrangements in basic institutions; that is, toward expanding the practice of serving exceptional children while they remain in their own homes and neighborhood schools. The result is an enormous challenge to all regular teachers, school principals, and other school staff members who now must participate more fully in programs for exceptional children. Similarly, large numbers of special educators, school psychologists, school social workers, and other specialists employed in the schools are being detached from their specialized work stations and asked to go to work in the mainstream context.

This *Special Education in Transition* series is predicated on the general assumption that the major transformation of the schools now under way, involving the renegotiation of many professional roles and the reorganization of many work stations, requires the development of a corresponding literature. Such a literature ought to be helpful to participants in the change processes through sharing what is learned about what works and what does not work. It also ought to serve as a kind of informal accountability tool by showing what can be achieved and, thus, suggesting to the public at large what it is that can be reasonably expected in various domains of performance.

In this new publications activity it is also planned that all varieties of participants in the change process ought to be reached. There is need for

a *shared* literature among teachers of all kinds, school administrators, school psychologists, speech-language pathologists, parents, and others. It is not enough in these busy times to develop separate literatures to be distributed in narrowly defined channels. The challenge today is to study children and to plan educational programs through broad, interprofessional, and family related dialogue. This view led us to the formulation of a broadly representative group of consulting editors to guide plans in the development and marketing of the reports.

Several specific assumptions have also been made in the development of these reports. First, the typical journal article is often too short and the traditional book too long and formal for the communication of essential ideas in a period of rapid change. Second, recognition should be given to the description and analysis of emerging programs as well as to reports of traditional research. Third, reports of difficulties and failures, as well as successes, in efforts of change are valuable. And, finally, reports ought to be published rapidly while they are still fresh from important experience.

Each book will have its own editor(s). Individuals interested in preparing a manuscript for the series are invited to write to the Series Editor. The Board of Consulting Editors will assist the Series Editor in evaluating each proposal and manuscript.

Maynard C. Reynolds

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Preface

The contents of this book are a praiseworthy example of the sharing of professional knowledge and skills within the context of Public Law 94-142 to enhance the educational opportunities of children with special needs. The implicit theme of the book is that the more educators know about each other's unique bodies of knowledge and skills, the more productively they can work together to maintain handicapped children in least restrictive placements and to write optimal individualized education programs (IEP's) for them.

Specifically, the contributors to this book—an audiologist, speech-language pathologists, a special educator, a classroom teacher, and a parent—describe their unique skills for and concerns with maximizing the development of hard of hearing children and youth, that small group of disabled students who often have been misdiagnosed, misunderstood, and neglected. In doing so, they illustrate how their knowledge and concerns can interact to provide a strong support base for insuring hard of hearing children all the benefits of Public Law 94-142.

In an earlier publication on the "forgotten" hard of hearing children in the public schools, Julia Davis (1977) attributed the neglect of these students to two major factors:

- (a) The unavailability of information about their needs and characteristics; and (b) the trend in training programs toward the production of specialists who are quite narrow in interests and abilities. The latter has resulted in specialists who diagnose but do not treat conditions, such as hearing loss; who teach deaf but not hard-of-hearing children; or who remediate language disorders, but only if they have no organic base. The professionals in any field who are knowledgeable enough

to plan, supervise, and execute educational programs for hard-of-hearing children are rare but, fortunately, their numbers are growing.
(p. 33)

In the large sense, this volume is an attempt to remedy the lack of trained specialists in the public schools who are knowledgeable enough to plan, supervise, and execute educational programs for hard of hearing children. By describing the knowledge and skills that are essential to maintaining hard of hearing children in mainstream settings and to writing optimal IEP's for them, the contributors also provide a framework for the preparation of relevant audiologists, speech-language pathologists, and classroom teachers. At the same time, the book as a whole demonstrates the importance of stressing, in preparation programs, how each profession interacts with the others so that, in the schools, the different practitioners can work together to create a strong, mutually supportive, network of services.

Birch (1976) described a number of programs for the successful mainstreaming of hearing impaired students that provides a useful complement to this book.

The Office of Special Education, Department of Education, played a major role in the initial conception and support of this book. The assistance of Dr. Thomas Behrens of the Office of Special Education is particularly appreciated; he is one of the foremost advocates for the needs of hearing impaired children in the country. Without him, this book would not have been done.

*Maynard C. Reynolds, Director
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Introduction

MARK ROSS

In a previous publication (Davis, 1977), hard of hearing children were referred to as the "forgotten" pupils in our schools because educators were literally unaware of their presence in the classrooms. In that book, I described in a general way the handicap imposed by a hearing loss; other contributors discussed the personnel and services that are needed to meet the educational challenge presented by hard of hearing children. In the present book, the process is carried one step further; the contributors describe the educational programming considerations that are the basis for writing individualized education programs (IEP's) for these children. In every chapter, for the most part, the focus is on the role of speech-language pathologists and on the information and sensitivities they require to fulfill their responsibilities. However, all professional educators who are concerned in one degree or another with these children will find the book of value because the contents describe the interrelations of all persons—speech-language pathologists, audiologists, classroom teachers, and parents—who must work together to produce optimal IEP's for hard of hearing children.

The role of speech-language pathologists is stressed for three very good reasons. First, as a professional group, they are already present in most school systems in this country and are providing some therapeutic services to hard of hearing children. Second, their professional background in the normal and abnormal communication process relates closely to the primary disorder of most of these children—the communication handicap—from which follow the academic and behavioral disorders many of them exhibit. Third, in our judgment, the speech-language pathologist is uniquely qualified to serve as the "case manager" or "coordinator" during the planning, scheduling, and followup phases of the IEP process (see Chapter 7). This judgment

follows from the scope of their competencies and responsibilities and from the usually more flexible nature of their day to day activities. (Arranging meetings, for example, would be much more difficult for a classroom teacher with a fully scheduled school day.) It is not meant to imply any "superior" status on their part or to denigrate, in any way, the vital contributions of other professionals.

Truly, all of us with some responsibilities for the management of hard of hearing children must function as a team. If I had to single out one professional who is the most important figure in the total educational experience of hard of hearing children, it would be the classroom teacher who is on the firing line with these children all day, every day. With the parents, the teacher is the one person who has the most opportunity to effect changes in children. The term *supportive*, as applied to the functions of the speech-language pathologist and other professionals, clearly implies a support target, and that is the classroom teacher. However, in this era of mainstreaming, it is manifestly impossible for the teacher to be an instant expert in all the varying disorders that may be displayed by the children enrolled in the class. Thus, he must depend upon the supportive contributions of all his colleagues and, specifically, in the context of hearing impairment, on the speech-language pathologist.

Our intention in this book is to provide speech-language pathologists with the information and perspective we think necessary for them to fulfill their responsibilities. Consequently, we assume that optimal recommendations will be made in evaluations, that for each child amplification devices and other instructional media will be available, that a cascade of educational alternatives for each child will be present, and that on site, competent, support personnel in the different specialties will be accessible. We are well aware that reality considerations may often dilute one's "optimum" intentions; no matter what the spirit or letter of Public Law 94-142, we know that in real life compromises will be made. Our rationale for assuming and presenting optimal conditions is based on the view that when programmatic compromises must be made, no matter how we deplore them, we should know what we are doing and why. Keeping our standards high and clearly visible will help reduce the extent to which an IEP will be vitiated by compromises. We make this point to assure the reader that although our heads may appear to be lost in the clouds, considering some of our statements and recommendations, our feet are planted on the ground of administrative necessity.

THE HARD OF HEARING CHILD

Although it was discussed at length in Davis (1977), the definition of what constitutes a hard of hearing child is reviewed here along with the reasons for distinguishing such children from those who are educationally deaf.

The hard of hearing child hears. He responds to both speech and nonspeech auditory stimuli. His language and speech skills, though perhaps delayed

and deviant, were developed primarily through the auditory channel, and he depends upon an auditory-verbal system for his major avenue of interpersonal communication. In addition, the auditory-verbal system is his major entry to the written word, which follows sequentially and is based upon the prior establishment of auditory based language. The hard of hearing child, thus, has much more in common with a normally hearing child than a deaf child. Unlike both hard of hearing and normally hearing children, the deaf child's communication skill development and his primary communication mode (lipreading, a manual system, or a combination of the two) are visually based. His entry to the written word is by way of the symbol system he develops through this visual communication channel; the relative ineffectiveness of this symbol system for competent entry into the English language and its related academic subjects has been attested to by literally thousands of publications for well over 100 years (Goetzinger, 1978).

It is crucial to distinguish conceptually between children whose language is auditorially based and those whose language is visually based if either is to receive appropriate educational intervention. Conceptualizing and, thus, treating the hard of hearing child like a deaf child, in terms of the handicap imposed by the hearing loss and the nature of the educational services and personnel required, often creates functional deafness in the hard of hearing child. One should not underestimate the power of the self fulfilling prophecy; children's performances accord more with our expectations than with their inherent potentials (Ross & Calvert, 1967). As professionals, we should not be in the business of creating "deaf" children out of those who are potentially hard of hearing. This statement is not meant to belittle deaf persons in any way, but simply to recognize that to be deaf in our society is a greater handicap, particularly academically and vocationally, than to be hard of hearing. The presence of residual hearing, no matter how limited, is literally a human birthright. It is the avenue that provides access to central mechanisms underlying normal communication skill development that have evolved over the millions of years of human development; it must be sensitively nurtured to improve the human condition.

In this book, when we must refer in a generic manner to all children with hearing losses, we use the term *hearing impaired*. This term is not a synonym for *hard of hearing*, although many lay and professional people often appear to use it in this sense. Occasionally, the term is modified by an adjective to denote severity of the hearing loss. The distinctions among the terms *hard of hearing*, *deaf*, and *hearing impaired* are drawn not because we are taxonomists by inclination or profession or pedants who find pleasure in exercising verbal analytic skills for their own sake, but to clarify the characteristics of the children we deal with. Our rationale is simple: The first step in managing any problem is to clearly define it, and the first step in providing appropriate services to children with hearing losses is to define them, categorically and individually, as accurately as possible.

Certainly, we recognize that some small minority of hearing impaired children cannot easily be categorized as either "deaf" or "hard of hearing."

They are able to use their residual hearing in some situations so they appear to be hard of hearing, but in other situations their primary mode of communication seems to be visually based. We would caution the readers not to become so involved with these exceptions that they ignore the general rule: Most hearing impaired children have a preferred and primary mode of communication and, thus, are either functionally deaf or functionally hard of hearing.

EXPLOITING RESIDUAL HEARING

It is not trivial to state that hard of hearing children are handicapped, that they are our concern because of the effects of their hearing losses, and, further, that the degree of their handicap bears a general, though far from perfect, relationship to the degree of their loss (reviewed in Stark, 1974). Unfortunately, this apparently simplistic concept must be restated frequently in practice because its clear implications are often overlooked. Certainly, many children with relatively mild losses function more like deaf than hard of hearing persons and, conversely, some severely hearing impaired persons use their residual hearing so well that one hardly knows that they have a hearing loss. Many of us are fond of ascribing additional esoteric diagnostic labels to explain the performance of the former child, while dismissing the latter one as an inexplicable "exception." We think there is a simpler explanation in most cases. Our view is that one child has been the recipient of appropriate, early, and supervised educational programming, while the other has not been so fortunate. (The possible presence of additional handicapping conditions must not be overlooked, however.)

Given what we know about the normal primacy of the auditory channel for speech and language development and the normal superimposition of reading skills upon an auditory based language capacity, it follows that our first, primary, and continuing emphasis with all hard of hearing children should be to maximally exploit their residual hearing capacity. This provision is not just one of a number of supportive services that the children may require as part of their optimal IEP's; it is the key service. It requires not only a skilled multidimensional audiological evaluation but, also, all aspects of amplification usage on a continuing basis (see Chapter 2). Once we are assured that a child's auditory requirements are being met, then we can more clearly assess the precise need for additional supportive services. Such services should supplement appropriate auditory management and not, as occurs very often, substitute for it.

EARLY DETECTION AND MANAGEMENT

It is no accident that the chapter following audiological considerations covers the assessment and management of the preschool child. Although these considerations are important for all hearing impaired children, they are absolutely crucial for the younger children. Early exposure to an amplified

speech signal precludes the deleterious effects of auditory sensory deprivation and, thus, enables us to use the auditory channel more effectively. The chapter sequence of this book emphasizes that the first crucial step in managing hearing impaired children, after the loss has been detected and defined, is to prescribe appropriate amplification. This is the only therapeutic measure that is directly related to the hearing loss condition—the reason we are concerned with these children in the first place.

We recommend a developmentally based therapeutic approach for hearing impaired children. The powerful biological and emotional forces that underlie and permit the normal unfolding of human development must be reckoned with in any kind of therapy endeavor with young children. It is not logical to try to impose upon a child patterns of parent-child relations, speech and language training, and cognitive expectations that conflict with the child's stage of development. We must recognize the shattering impact upon parents once they learn they have a handicapped child. Given the assistance of sensitive professionals, parents and professionals eventually will learn to support and complement one another in dealing with the child, instead of stumbling into the emotionally draining adversary relationship that, unfortunately, so frequently passes as "parent counseling." Professionals should not see themselves or be seen as surrogate parents. A teacher's love and concern is a poor substitute for the bonding that must occur between parent and child if the child's full potential as a human being is to emerge (Luterman, 1979).

The parents of all handicapped children, and certainly the parents of all hearing impaired children, have a great deal in common. Parental rights under Public Law 94-142—to be fully informed and equal participants in the educational planning for their children—transcend the particulars of any handicap. The parent essay in this book, for example, was written by the father of two deaf children, yet the perspective and content also apply to parents of hard of hearing children as well as other "special needs" children, no matter how different the children's needs may be.

In respect to speech, language, and cognitive development, we must recognize that each child has his own timetables for the emergence of the various capacities. We know that children have an impressive potential for learning speech and language. The complex chatterings of normally hearing nursery school children who are not yet exposed to formal education reveal how much of society's communication code they have already learned. Hearing impaired children have the same potential but lack sufficient recurring experience with the auditory code of language. Our role is to provide young children with the optimal conditions for doing their own learning; it is not for us to superimpose maladaptive cognitive demands or a structured communication curriculum upon them. The parents of preschool hearing impaired children are much more necessary for their emotional development and can be much more effective "teachers" than any professional, while the children themselves can be trusted, given the opportunity, to be optimally efficient in developing auditory-verbal skills. The key concept here is blend-

ing in with the children's normal developmental patterns, rather than superimposing an adult based, structured framework upon them.

A large portion of the failures of hard of hearing children can be ascribed to ineffective and delayed early management; that is, to not using appropriately and at a sufficiently early age the contribution of the home and the parent as well as the children's innate potential. No educational plan for these children can be considered even adequate if an early detection and management phase is not included.

The hard of hearing child's education must begin at the time of detection and not at an arbitrary age (i.e., age 3, the mandatory lower limit built into Public Law 94-142). By beginning early, we can preclude the physiological effects of auditory-sensory deprivation, provide an auditory sample of the language during the critical early stages of normal speech and language development, and forestall the emergence of secondary (usually behavioral) disorders fostered by late diagnoses of the primary problem (the hearing loss). No school system should exclude children under the age of 3 from suitable educational management. Since children's needs do not change to suit regulations, it is imperative that regulations be amended in favor of the children.

EVALUATION AND ACCOUNTABILITY

Educational Assessment

Some of the weaknesses and limitations of standardized tests are noted in Chapters 3 and 4. We are not so enamored of numbers to consider that test scores are the only way a hard of hearing child can be adequately described. Nor, however, are we insensitive to the need for objective performance indices on a number of important dimensions. Perceptive teachers/clinicians can offer insights into a child's problems and status that no standardized test can possibly replicate. On the other hand, there is a need to plot objectively a child's growth in a number of academic areas across time, and to compare his performance with his hearing and hearing impaired peers. Both clinical and objective data are needed.

We would like to depend more heavily than we do upon the teacher/clinician's and parents' evaluation of a child. We would like to refer questions regarding a child's performance to the professionals and parents who are with him every day, and to query them regarding the success, failure, or problems of a particular program. Unfortunately, we have a history of research that attests to the inherent weakness of this practice. Human beings possess an awesome capacity to see what they want to see, that is, to perceive a child according to their own needs and biases rather than the child's objective performance. Currently, therefore, we have no alternative but to buttress the subjective judgments of all involved with a child with objective indices of his performance. Our problem here is that we do not

have a full array of measuring tools that provide such objective indices, particularly for the older hard of hearing child. Yet we cannot wait until some test developer gives us the necessary tools before we make performance and placement decisions; we must make do with what we have. However, it is a sad commentary on the present state of affairs that even our limited available tools are not being employed; moreover, even when employed, they are often not used correctly (see Chapter 4).

The standard we use in evaluating a child's performance must be explicitly apparent. We suggest three standards, each of which has a place and each of which has merit. First, we must consider a child's performance in relation to himself, that is, in all the relevant areas which we can assess objectively or subjectively. We must ask, how does the child's performance differ now from the last evaluation? If improved, by how much, and in what areas? Second, we must consider the child's performance in relation to other hard of hearing children. Is his performance in all the relevant dimensions on a par with the performances of his hearing impaired peers? What areas need strengthening? Can we explain, by reference to the child's specific program and/or his personal assets, diverse achievement across dimensions? This is a very difficult standard to apply in practice for two reasons. First, there are no state or national performance norms to which the child's accomplishments can be referred. Such normative data are available, through the Office of Demographic Studies of Gallaudet College, for hearing impaired (mainly "deaf") children enrolled in special programs, but not for hearing impaired children (mainly "hard of hearing") enrolled in mainstream settings. Second, even the one dimension which the children presumably have in common—that is, they all have hearing losses—displays such a continuum of degree and types across one or both of their ears, that characterizing the average child to which other children's performance can be compared may be too great an oversimplification.

A very vital but often overlooked standard is the child's status in reference to his normally hearing peers. This standard is sometimes criticized for being "unfair" to hearing impaired children. The spoken or implied comment is that we cannot expect "these poor little deaf children" (though they may be, in fact, hard of hearing) to achieve on a par with their hearing peers. Often, when a teacher or clinician is asked to report on a hard of hearing child's performance, the response is highly positive. However, probing reveals that the professional has applied a lower achievement standard in making the judgment regarding the child. Lowered standards do the child an injustice; no one should anticipate failure or lower performance by reducing the expected standards of achievement for anyone. Perhaps a child's ultimate achievement will be less than that of his normally hearing peers, but by expecting more and by assuming a normal level of accomplishment, we may find that the performance is higher than if we began by lowering our expectations. All three standards are valid and one should know which one is being applied in particular circumstances.

Psychological Assessment

Accountability and evaluation, as Davis points out in Chapter 5, include more than the traditional areas of communication and academics. No IEP can be considered complete unless the psychosocial status of a child is considered. Whatever the child's performance in the traditional areas of educational focus (reading, writing, and arithmetic), if he is isolated and withdrawn from his normally hearing peers, or if he acts out and becomes a turbulent force within the classroom, we must assume that we (parents and professionals) have failed in an important aspect of his development. I do not subscribe to the narrow view of educational responsibility which holds that the school is responsible only for imparting the basic academic skill subjects. Too much of what is vital for a young child occurs in the school, too much of his self esteem and psychosocial development reflect the influence of his peers and teachers in the school environment. One cannot arbitrarily isolate academics from all the other influences that impinge upon a child in schools; these influences can either negatively distort or positively strengthen the sum total of his personality. Moreover, for the hearing impaired child who cannot easily engage in two way verbal communication, his psychosocial adjustment to the school situation cannot help but affect his performance in academic areas. A happy child is apt to learn much more than an isolated, disruptive, or unhappy child.

PARENTS AND TEACHERS

In this book, we have called the parents and teachers *consumers*. I hope, however, that the content of this chapter to this point will dispel from the reader's mind any passive connotation of this term. Their importance has been stressed throughout. By *consumer* we mean the primary recipients of our services, the ones to whom the "supportive" professionals are accountable. For the preschool child it is the parents, and for the school age child it is both the classroom teacher and the parents who are the key influences on the child's life. As I view one major function of the speech-language pathologist, it is to assist these individuals to carry on their primary role with their children. In order to do this, the speech-language pathologist must understand the "consumer" point of view—the needs, questions, fears, and concerns of the parents and teachers. The speech-language pathologist must know "where they're coming from." This is the intent of Chapters 6 and 7. The writers ask us many questions and express their trepidations. They present the real situation confronting speech-language pathologists (and, of course, other professionals) in interactions with classroom teachers and parents of hard of hearing children. The insecurities of "consumers" are perfectly natural and understandable; they cannot be ignored.

I have rarely met parents of a hearing impaired child, particularly a younger child, who were completely relaxed and understanding toward their child's handicap. Nor is the author of Chapter 6 in this book such a parent.

Such a state is neither desirable nor natural. What is apparent in Chapter 6 is the parent's active, rational, and informed concern with his children and with their and his rights under Public Law 94-142. Such a parent is a tremendous ally in our mutual fight for a child's well being. But, in order for us, the professionals, to help such parents, we must first listen to them and truly "hear" what they are saying. Although the specifics of the message may vary, the need to understand should always be present.

The classroom teacher is often regarded as the low man on the educational totem pole, a condition which is neither desirable nor logical because he has the greatest immediate impact upon a school aged child. As a parent, when I visit my children's schools, I do not ask to talk to the principal, the superintendent, or the school committee; I want to talk to the teachers in whose classes my children are placed from one to five hours a day. It is only in exceptional cases—when a problem is apparent—that any of us go beyond the classroom teacher; when we do, it is usually because we want to change something in the classroom in our child's favor (e.g., a different teacher). Furthermore, classroom teachers are the favorite "whipping boys" of support personnel; if something goes wrong with a child, it is the teacher's fault, but if something goes right, it is because we have provided them with the proper special service (an educational "Catch 22").

In my experience, most teachers are human (excepting perhaps my fifth grade teacher in P.S. 188!). They may get tired, frustrated, annoyed, and just plain disgusted but they also want to teach children and have successes. Considering the inadequate remuneration of teachers, the successes may be the major reinforcement for their activities. Faced with a "special" child, they may panic. How much time will this child take away from the other children? Mention "hard of hearing" and the immediate association may be that the child is deaf. Is he dumb too? And so on. Teachers have understandable questions and fears about the placement of a "special" child in their classrooms. The speech-language pathologist, the primary support person for the teacher who receives a hard of hearing child, must understand these fears and questions if he is to offer the teacher, and the child, the kind of assistance both require. Hence the format of the teacher's chapter: It provides a vehicle for the vivid expression of the teacher's concerns and gives direction to the speech-language pathologist.

WRITING EFFECTIVE IEP'S

It is unfortunate but true that too many IEP's have been written for hard of hearing children to satisfy political rather than educational purposes. This situation arises for a number of reasons: A school system still may be locked into the old idea of providing one kind of educational programing for every child with the same kind of handicap; the school system may not employ sufficient personnel with the necessary skills to participate in the process of creating IEP's; the available specialists may not know what skills

contribute to assessing a child's educational needs and prescribing for them through the IEP process; or, the specialists may not know how to coordinate their various expertises to participate in the IEP process.

Chapters 2, 3, 4, and 5 in this book focus on the knowledge that audiologists, psychologists, and speech-language pathologists should bring to the IEP process. In Chapter 8, Nober demonstrates how these skills interact with the concerns of classroom teachers and parents to produce the best possible IEP for each hard of hearing child. More important, perhaps, she provides guidelines for the total IEP process from the identification of the hard of hearing child through the monitoring of the IEP which has been written for him. In a sense, Nober's chapter is the focal point of this book. The purpose of all our skills, knowledge, and concerns, in the final analysis, is to enhance the educational opportunities for hard of hearing children, that is, to make their educational experiences meaningful and productive.

CONCLUSION

Chapter 9 pulls together the main strands of the preceding presentations and calls attention to some educational considerations that are not discussed elsewhere. It emphasizes the positive thrust of this book. We are saying that hard of hearing children can be educated successfully alongside their normally hearing peers, in spite of our long, national history of failure in this regard. We have the means and the information; what we need are dedicated and competent professionals and parents to make our goal a reality. The information in the following pages should be viewed by any teacher/clinician reading this book as an appetizer; for the main course, we recommend the bibliography at the end of the book. Professional education should never be a terminal condition. Our children cannot grow if we do not.

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Audiological Assessment and Management

ANTONIA MAXON

Audiological assessment and management are necessary preconditions for determining and continuing appropriate school placement for the mainstreamed hard of hearing child. Before assessment and management procedures can be carried out, the child's ability to use his residual hearing must be determined. Along with type and degree of hearing loss, information about the child's personal amplification, school used amplification, availability of relevant school personnel, and placement settings is important for auditory management. The audiologist is the professional who is responsible for gathering this information and communicating it to the direct service personnel.

Two assumptions underlie this chapter. The first is that the child who will be evaluated by the audiologist has already been identified through a screening procedure (see Nober, Chapter 8), and the second is that the audiologist who conducts the evaluation procedures will convey the results and implications to the school speech-language pathologist or other appropriate direct service personnel. Thus, the contents of this chapter are intended to familiarize the speech-language pathologist and other direct service personnel with the procedures, recommendations, and educational implications (including amplification systems) of an audiological evaluation.

CLINICAL AUDIOLOGICAL EVALUATION

All mainstreamed hard of hearing children require at least an annual audiological evaluation that should include the following procedures:

1. Pure tone and speech measurements.
2. Impedance measurements.

3. Electroacoustic evaluation of personal hearing aids and wireless FM auditory trainers.
4. Subjective evaluation of personal hearing aids and wireless FM auditory trainers.

For many hard of hearing children in the mainstream setting, an annual audiological evaluation is sufficient, but for some children more than one visit a year is necessary. When a child demonstrates a conductive component (an outer or middle ear disorder that may be responsible for a measurable air bone gap) and is referred for otological evaluation and treatment, a recheck of the child's hearing is necessary after treatment has been completed. Any time the parents, teachers, or child suspect that there has been a change in hearing (e.g., a change in a conductive component) or a breakdown of amplification, an audiological evaluation should be carried out.

For the child who needs a recommendation for new amplification, either personal or school worn, results of an updated audiological evaluation must be available. After the new system has been obtained, it must be checked electroacoustically and subjectively by the audiologist. For younger or newly identified children, the frequency of routine audiological evaluations should exceed once a year. Although no hard and fast figures can be given, a rough estimate would be every month or two for the infant (until a clear picture of the child's auditory status emerges), three times a year for the nursery school age child, and twice a year for the kindergartener and first and second graders. The ultimate criterion, of course, is the child's needs as perceived by the managing professionals and parents rather than a specific guideline.

From the preceding outline it can be seen that every audiological evaluation must be thorough (Martin, 1975). Pure tone air and bone conduction thresholds are obtained from conventional or modified audiometric procedures (e.g., play audiometry is used with younger children and those who are difficult to test). These thresholds are then compared to the last available audiogram to see if any significant change in hearing status has occurred. The presence of any significant air bone gap (conductive component) should also be noted. Speech Reception Thresholds (SRT) are typically measured by having the child repeat spondaic words to determine the lowest intensity level at which 50% of speech information is received. For the younger child or for any child who has difficulty repeating words, picture pointing is substituted as a response and a valid SRT can be obtained. If any change in pure tone thresholds has been noted, a similar change in SRT is likely to be found.

When thresholds have been determined, the child's ability to discriminate speech sounds at a comfortable listening level is evaluated using monosyllabic words. These speech discrimination scores enable the audiologist to estimate the extent to which the child makes use of his residual hearing. Since a correct response is dependent on the child's ability to repeat all the phonemes correctly, it may be preferable to use a written or picture pointing task for a child with an articulation problem. Whatever type of response is

used, the audiologist wants to be certain that an incorrect identification has occurred because the word is not in the child's vocabulary. Word lists (PB-K) and special tests (Word Intelligibility by Picture Identification) have been designed for children with kindergarten or lower level vocabularies. After the SRT and speech discrimination scores have been obtained, the intensity levels at which the child finds speech most comfortable to listen to (Most Comfortable Level or MCL) and too loud to listen to (Tolerance Level) are determined (Martin, 1975). These measures are important indicators of the characteristics of the potential amplification that will be appropriate for the child.

To further evaluate the child's auditory status, electroacoustic impedance measurements are performed. The use of impedance audiometry is becoming an increasingly routine assessment tool, often employed in the school hearing conservation program as part of hearing screenings. These measurements include tympanometry, i.e., evaluation of middle ear pressure and tympanic membrane mobility; static compliance, i.e., evaluation of stiffness (the converse of compliance) of the middle ear cavity; and stapedial reflexes, i.e., the evaluation of the middle ear muscle's (stapedius muscle) ability to contract to loud sounds. A tympanogram is plotted from a measurement of sound reflected off of the tympanic membrane; it displays air pressure in mm/H₂O, along the horizontal axis and compliance of the ear drum along the vertical axis. From the tympanogram, the point of maximum compliance as a function of air pressure can be determined. Tympanograms have been divided into types and classified according to diagnostic implications (Jerger, 1975). Figure 1 shows five typical tympanograms found in a general clinical population.

Type A (Figure 1a) is the type of tympanogram that one would expect to find for a normal or sensorineural ear. The maximum compliance is found at 0mm/H₂O and approaches or reaches the top of the tympanogram.

Figure 1b shows a Type Ad tympanogram which is generally found when there is a very flaccid tympanic membrane; the maximum compliance is also at 0mm/H₂O but the point of maximum compliance is not found. Such a configuration demonstrates that the drum is much more compliant than a normal eardrum. One would expect to find such a tympanogram with a person who has a disarticulation of the ossicular chain because the chain can no longer hold the drum in its normally tense position.

A Type As tympanogram is shown in Figure 1c. This tympanogram is typically found with a patient who has clinical otosclerosis causing the stapes to be held more tightly than normal in the oval window thereby reducing the mobility of the ossicular chain and the tympanic membrane. One can see from the figure that the decreased mobility of the drum is represented by reduced compliance, as compared to a normal drum. The fact that the middle ear pressure is normal can be assumed because the maximum compliance is found at 0mm/H₂O.

Poor ear drum mobility and no change in drum compliance with change in air pressure is demonstrated in Figure 1d. Such a tympanogram (Type

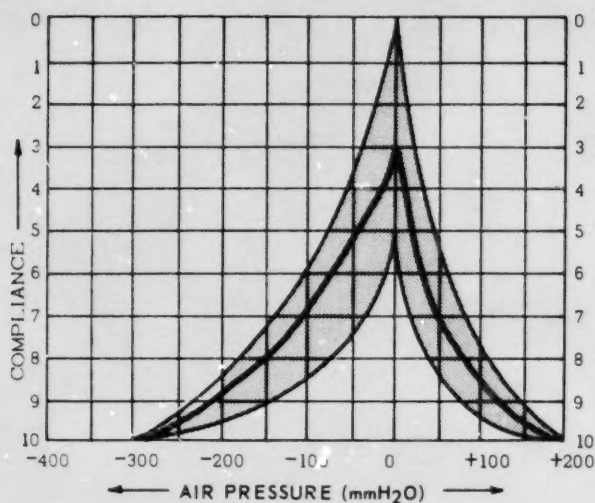


FIGURE 1a. Type A Tympanogram, Usually Found with Normal or Sensorineural Ears; The Shaded Area Represents the Range of Normalcy.

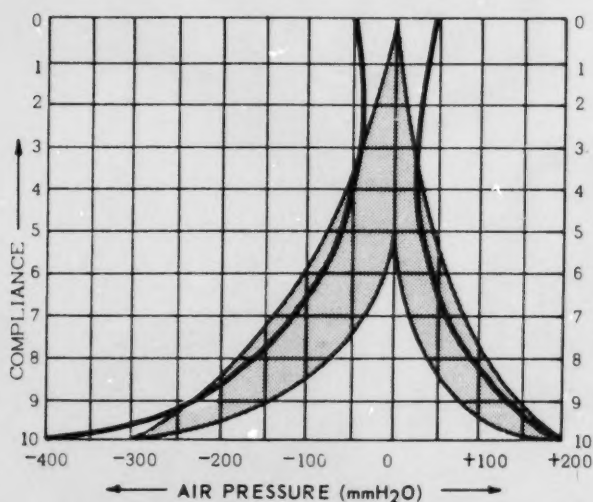


FIGURE 1b. Type Ad Tympanogram, Usually Found with Ossicular Chain Discontinuity.

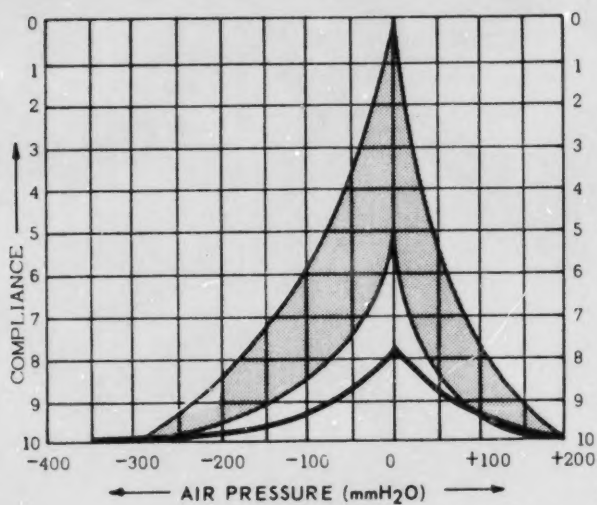


FIGURE 1c. Type As Tympanogram, Usually Found in Individuals with Otosclerosis.

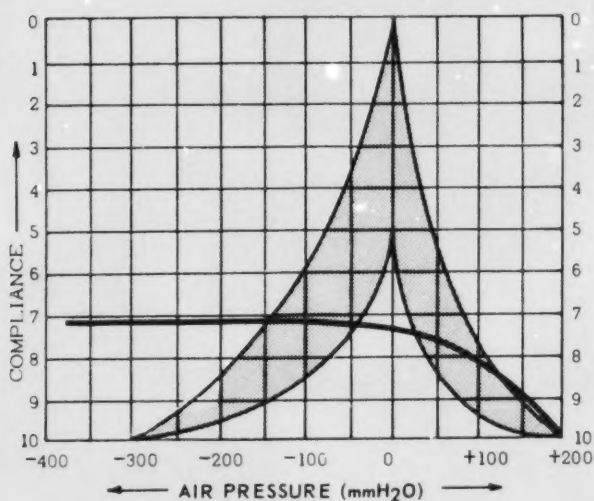


FIGURE 1d. Type B Tympanogram, Usually Found with Otitis Media.

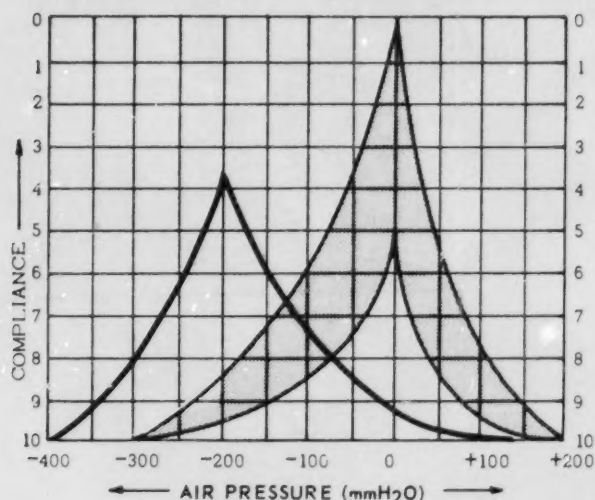


FIGURE 1e. Type C Tympanogram, Usually Found with Eustachian Tube Dysfunction.

B) is indicative of some type of mass in the middle ear, e.g., fluid, and is typically found in someone who has a middle ear infection.

A Type C tympanogram, Figure 1e, indicates that the compliance of the tympanic membrane is normal but the pressure in the middle ear is negative. Negative pressure in the middle ear is often associated with eustachian tube dysfunction.

The static compliance of the middle ear is measured in terms of equivalent volume in cc. Two volume measures are taken: C_1 , which is equal to the volume of the external auditory canal when the tympanic membrane is least compliant, and C_2 , which is equal to the volume of the external auditory canal when the tympanic membrane is most compliant. Static compliance equals C_2 minus C_1 . In the normal ear, static compliance should fall between .30cc and 1.60cc; a stiff middle ear should have a static compliance less than .30cc; and a flaccid middle ear should have a static compliance greater than 1.60cc.

Measurement of the stapedial reflex is made through the observation of changes in the compliance of the tympanic membrane. The stapedius muscle attaches to the stapes (one of the ossicles) and on contraction pulls on the stapes thereby tightening the whole ossicular chain. The tightening of the chain causes the tympanic membrane to stiffen, thereby reducing its compliance. Since the stapedius muscle normally contracts reflexively to loud sounds, a change should demonstrate compliance of the drum during measurement, if a loud sound is introduced to the ear. The normal ear will show

stapedial reflexes when the ear is stimulated with a tone between 70 and 100dB HL. A patient with a severe to profound sensorineural hearing loss will usually have absent reflexes bilaterally, i.e., the sound will not be loud enough to elicit a contraction. A bilateral moderate sensorineural hearing loss may yield reflexes either at normal or elevated hearing levels depending on the person's tolerance for loud sounds. People with significant conductive hearing losses may not have measurable stapedial reflexes bilaterally. Stapedial reflex levels, or their absence, can help not only to provide important diagnostic information, but can also be useful in determining the amplification needs of hearing impaired children (Northern, 1977).

If the tympanograms, static compliance, and stapedial reflex measurements fall outside the defined normal limits, a conductive component is suspected and an otological referral is generally made. These measurements are particularly valuable for the child whose hearing loss is so severe that responses to bone conduction stimuli cannot be obtained, or for the child with whom masking for bone conduction thresholds cannot be carried out. It is quite possible for a conductive component to suddenly occur and to be superimposed upon a basically sensorineural impairment, thus further reducing a child's ability to use his residual hearing effectively.

Having assessed the child's hearing, it is then necessary to assess the functioning of the amplification systems the child is using and how well he performs with them (Ross, 1977). Electroacoustic measurement of the hearing aid(s) and school worn wireless FM auditory trainer are carried out to determine the output of the amplification across the spectral range (the range of frequencies amplified by the amplification system), the actual amplification provided at the various frequencies, and the frequency range which is being amplified. If it is determined that both the hearing aid and FM system are meeting the specifications stated by the manufacturer and are appropriate for the child's hearing loss, a subjective evaluation of the child's performance with the system(s) is conducted. If there is an electroacoustic problem (distortion, reduced amplification output), repair of the system(s) or, in some instances, a new system(s), is recommended.

The subjective evaluation is carried out in an audiometric test suite with the child wearing the system(s). Aided and unaided sound-field warbletone (a pure tone that shifts rapidly back and forth in frequency at a predetermined rate) or narrow band noise thresholds are compared to determine how much functional amplification the child is receiving across the frequency range. Aided SRT's and speech discrimination scores are also obtained to find out how well the child can receive and discriminate speech information when he wears the system(s). If possible, speech discrimination scores are obtained by presenting the words at 45dB HL (normal conversational speech level) to determine how well the child understands speech that is presented at a typical conversational level. If the child's aided SRT is poorer than 45dB HL, it should be noted he will have that difficulty receiving and understanding normal conversational speech even with amplification. The audiologist's report to the school personnel is important

because the child is always functioning with either his personal hearing aids or FM system in the school setting. Any person working with the child should know how well he is able to function with amplification so that the expectations for his auditory performance will be realistic.

If the hearing aid(s) or FM system is not functioning properly and cannot be repaired, then an evaluation to select a new one is recommended. When the systems themselves are functioning correctly but an earmold no longer fits properly, the audiologist takes an earmold impression from which new earmolds can be fabricated.

After all the clinical audiological information has been obtained, the results are explained to and discussed with the child's parents. Among the topics covered are the specific problems the child is likely to have, considering the type and degree of his hearing loss and its implications for school performance. The audiologist prepares a written report that includes copies of the audiogram, impedance measurements, aided audiograms, and explanation and discussion of these results. When appropriate there is a discussion of educational considerations, such as recommendations for changes of amplification, speech and language management, and classroom acoustics (Figures 2a-c). Copies of this written report are sent to the parents, the IEP team coordinator, the speech-language pathologist, and any concerned agencies or physicians. The audiologist follows up on his recommendations to assure that they are carried out, and he makes himself available for further consultation about the evaluation should the need arise. It is important not to limit communication with school personnel to a written report. Whenever possible, and optimally it always should always be possible, the audiologist should visit a child's school and personally explain the implications of his evaluation to all direct service personnel.

HEARING AIDS

Hard of hearing children in the public schools ordinarily use two types of amplification systems: personal hearing aids and wireless FM auditory trainers which are worn in school (Ross, 1979).

Personal Hearing Aids

The personal hearing aid may be ear level or body worn; certain components and electroacoustic characteristics are common to both, however. The components are a microphone, amplifier, transducer (miniature loudspeaker), battery, and an earmold, which is important but ancillary. The microphone is designed to pick up acoustic signals and to convert them into electrical signals which can be amplified electronically. Once amplified, the electric signals are transformed by the transducer back to acoustic signals and they are delivered to the ear via the earmold. The hearing aid is powered by the battery; it should be noted that without a good battery the hearing aid cannot function properly, if it functions at all. External controls on an

amplification system include a volume control, on/off switch, and, sometimes, a telephone switch is added to the components. The latter allows the wearer to substitute a wire coil for the microphone and, thus, to pick up the electromagnetic field surrounding a telephone receiver.

In ear level hearing aids, all the components with the exception of the earmold, fit into a small plastic case that is worn behind the external ear. (In the in-the-ear hearing aids, the components fit entirely within an earmold.) In body worn hearing aids, the microphone, amplifier, and battery fit into a relatively small case which is worn on the chest, in either a harness or shirt pocket. The transducer is in the form of a small button that snaps into the earmold and is connected to the rest of the hearing aid by a wire cord. Like the ear level hearing aid, the body worn hearing aid has external controls for volume, on/off, and telephone.

There are pros and cons for both types of hearing aid. Body aids are sturdier and the controls are easier for a young child to manipulate. However, because these aids are chest worn, the signal is not detected in its normal ear level location; also the possibility is increased of picking up clothing noise, that is, the rubbing of the microphone against clothing. Cosmetically, of course, the ear level aids are generally preferable, particularly for the adolescent. Most of those that are available now are capable of producing enough amplification even for the most severe hearing loss. However, the problem of feedback is more likely to occur with ear level than body aids. Feedback (a high frequency "whistle") is produced when the amplified signal escapes through the earmold and is picked up again by the microphone and reamplified. The closer the microphone is to the transducer the more likely it is that feedback will occur, particularly with hearing aids that have high gain and outputs (see the following discussion). Therefore, the chances of feedback are less with body aids than with ear level aids.

When the audiologist is determining which hearing aid is appropriate for a particular child, the different electroacoustic characteristics must be considered. The three most important characteristics are gain, measured in dB SPL; saturation sound pressure level (SSPL 90), measured in dB SPL; and frequency response, the relative gain of the hearing aid across the frequency range. The gain (the difference between the input and output of the aid) tells how much amplification the hearing aid produces across a specific frequency region; that is, if the hearing aid has a gain of 40dB and a 60dB input is picked up by the microphone, a 100dB output will be delivered to the ear.

The amount of gain produced by the hearing aid in a specific instance is also controlled by the SSPL 90 and the frequency response characteristics of the hearing aid. The SSPL 90 is the maximum sound pressure level which the hearing aid can produce; that is, if the SSPL 90 of an aid is 110dB SPL, it is the maximum SPL that the aid can produce regardless of the level of input and the gain of the aid. For example, if a hearing aid with a gain of 50dB and an SSPL 90 of 115dB receives an input of 30dB, the output will

Name: D. D.

Date of Evaluation: 2-3-80

Birthdate: 10-6-65

Audiologist: A. M.

Background Information

D. D. was seen on February 3, 1978, for an audiological evaluation and hearing aid check as part of the ---- Mainstream Project. D. D. has been followed since 1972 when a hearing evaluation at H---- Hospital revealed a moderate bilateral sensorineural hearing loss. The hearing loss was found to be progressive, and her last audiological evaluation at The ---- Speech and Hearing Clinic on May 23, 1979, revealed a shift in both ears from moderate to severe levels. D. D. has been concerned recently that there has been a further shift in her hearing. Mrs. D. reported that testing in the school revealed a mild shift in D. D.'s hearing, and that her FM auditory trainer had to be turned up.

D. D. is currently wearing hearing aids in both ears, set for 125 dB SPL MPO and between N and H setting on the tone control. She reported them to be in good working order, but Mrs. D. reported an increasing difficulty in her phone usage. D. D. has an FM auditory trainer which she reportedly likes. She did report, however, that she thinks the teacher's microphone is not working.

Test Results

Results of pure tone air and bone conduction testing revealed a flat bilateral, moderately severe sensorineural hearing loss. Thresholds in the right ear were relatively stable from her previous assessment, however thresholds in the left ear did show somewhat larger shifts (15 dB), especially at 2000 and 3000 Hz. Speech Reception Thresholds of 70 dB were obtained in both ears showing good agreement with the pure tone results. Unaided speech discrimination scores obtained with W-22 words were 56% correct in the right ear at both 100 and 110 dB HTL (30, 40 dB SL). Discrimination in the left ear was 72% correct at 100 dB HL (30 dB SL) and 52% at 105 dB HL (35 dB SL).

Electroacoustic assessment of middle ear function revealed normal middle ear pressure and tympanic membrane movement bilaterally. Stapedius muscle reflexes were elicited at reduced sensation levels at 500-2000 Hz when stimulating both ears.

Tone decay testing, performed at 2000 Hz in both ears, showed no evidence of abnormal threshold shift in either ear.

FIGURE 2a. Narrative Audiological Evaluation.

Hearing Aid Evaluation

With her aids set as mentioned previously, D. D. scored 44% correct on W-22 words presented at normal conversational levels (50 dB HL) in the sound field. This score was considerably poorer than either the 84% or 82% scored in the right and left ears respectively at the time of her hearing aid evaluation (June 16, 1979). With the MPO increased to 132 dB SPL on both aids, the same 44% score was obtained. Testing each aid separately, D. D. scored 62% correct with the right ear and 56% correct with the left ear under the same test conditions.

With her FM auditory trainer, D. D. scored 72% correct at normal conversational levels. Both electroacoustic analysis and sound field warble tone thresholds indicated that the significant difference in gain between the much preferred FM and her hearing aids was in the low frequencies. Consequently the hearing aids were reset to provide further low frequency amplification.

Impressions and Recommendations

Today's results indicated that there has been a slight shift in D. D.'s hearing in the left ear. The right ear remained stable. Both stapedial reflexes and decay testing continue to indicate that the hearing loss is cochlear in nature.

In light of the pure tone results, the drop in aided speech discrimination was not explainable. It was decided to let D. D. adapt to the new settings on her hearing aids and have her return for further evaluation in the near future (February 24, 1980). D. D.'s FM was shown to be in good working order, on the "aid" or "both" setting, but is dead on the "teacher" setting.

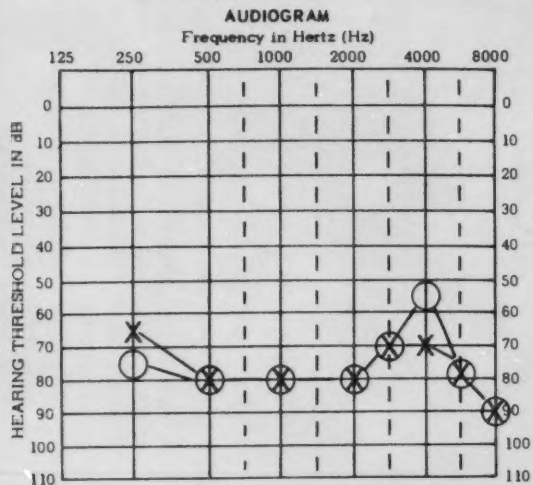
It should be kept in mind that consistent and appropriate amplification is imperative for the hearing impaired child. A properly functioning FM unit is crucial to D. D. in that it is built to suppress unnecessary background noise while amplifying the speech she needs to hear. This is especially crucial in D. D.'s case in that she is highly motivated and shows a good awareness of her hearing aids and FM unit. Repairs to the FM should be made as soon as possible so as to meet D. D.'s need and desire for appropriate amplification.

On the basis of today's results the following recommendations are made. D. D. will be re-evaluated with her hearing aids in the near future, to determine the effect of the hearing aid modifications. D. D.'s FM unit should be repaired as soon as possible to facilitate the aforementioned consistent amplification. Since it is possible that D. D.'s hearing will continue to shift, it is recommended that D. D. continue to be re-evaluated every 6 months.

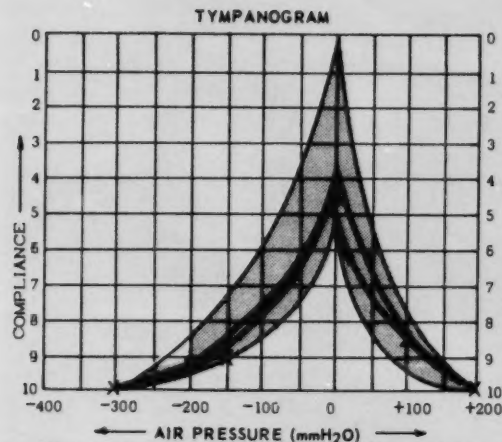
If there are any questions regarding this report, please feel free to contact us.

AUDIOLOGICAL EVALUATION

Last Name D. D.	First Name	Initial	Address	Phone	Birthdate 10-6-65
Referred by			Tested by A. M.	Patient No.	Date 2-3-80



AIR CONDUCTION (dB)									
RIGHT EAR					LEFT EAR				
250	500	1000	2000	4000	250	500	1000	2000	4000
Masking Level Opp. Ear					Masking Level Opp. Ear				
BONE CONDUCTION (dB)									
RIGHT EAR					LEFT EAR				
250	500	1000	2000	4000	250	500	1000	2000	4000
Masking Level Opp. Ear					Masking Level Opp. Ear				



	RIGHT	LEFT
Tympanogram Type	A	A
Middle Ear Pressure (mmH ₂ O)	0	0
Static Compliance (cm ³)	.75	.81

STAPEDIUS REFLEX (HTL)

	250	500	1000	2000	4000
Stimulate RE		80	85	90	
Probe - LE				Half-Life Decay (SEC)	
Stimulate LE		85	85	85	
Probe - RE		0		Half-Life Decay (SEC)	

SPEECH TESTS					
	RIGHT		LEFT		
PTA		2 Freq		2 Freq	
PTA	70dB	3 Freq	70dB	3 Freq	
SRT-1	70dB	Masking	70dB	Masking	
SRT-2					
MCL	100		100		
UCL					
DISC.	%	HTL	%	HTL	
		Mask		Mask	
W-22					
Full					
REC					
MLV					
SP					

	RIGHT	LEFT
Air Unmasked	O	X
Air Masked	Δ	□
Bone Unmasked	<	>
Bone Masked	□	□
No Response	↗	↘
Sound Field	S	
CNT	Could Not Test	
DNT	Did Not Test	

Audiometer	
Impedance Meter	
1969 ANSI Standards	

COMMENTS

No Response by Bone-Conductor

FIGURE 2b. Audiogram and Impedance Results.

Name: D. D.

Date: 2/3/80

	Unaided	Ear		B		Ear		B		Ear		B		Ear		Binaural	
		#1	#2	#3	#4	#5	#1	#2									
Make																	
Model						FM											
Gain setting		#3	#3	#5													
Power setting		125	132	Max													
Frequency response		N-H	N-H	N													
SRT																	
Threshold of Discomfort																	
Discrimination Quiet #1																	
Speech level																	
Discrimination Quiet #2																	
Speech level																	
Discrimination Noise #1																	
Sp. lvl.	Noise lvl.																
Discrimination Noise #2																	
Sp. lvl.	Noise lvl.																
Subjective grading (#1 Best)																	
Subject's comments:																	

Pure Tone Balance or Sound-field Audiogram		Key to Audiogram		Recommendations	
125	250 500 1000 2000 4000	Unaided	○	Aid suggested	#
Hearing level -10 0 10 20 30 40 50 60 70 80 90 100		Aid #1	X	Speech reading	
		Aid #2	Δ	Auditory training	
		Aid #3	□	Language therapy	
		Aid #4	●	Counseling (including parent)	
		Aid #5	▼	Desires Therapy	
		Bi-naural	■		
		Examiner's Remarks:			

FIGURE 2c. Hearing Aid Evaluation.

be 80dB; but if the same aid receives an input of 80dB the output will not be 130dB, but 115dB.

The frequency response characteristics of the hearing aid are a graphic portrayal of the relative gain of the hearing aid at various frequencies. The frequency response curve must be differentiated from the curve that actually plots the SSPL 90 of the hearing aid across frequencies. This so called saturation output is obtained by driving the aid with a 90dB SPL input signal, a level that is usually sufficient (maximum gain level used) to elicit the SSPL 90 of the aid at all frequencies. The true frequency response curve is obtained with a much lower level intensity signal (usually 60dB SPL) which does not saturate the aid.

Although rapidly changing, most presently available ear level hearing aids have very low levels of gain for very low (below 250 Hz) and higher (above 5000 Hz) frequencies. The amount of desired gain, SSPL 90, and frequency response is determined by the severity of the person's hearing loss, the frequency region in which the loss occurs, and the person's tolerance level. It is important to note the tolerance level and to be sure that the SSPL 90 is not greater than that level because otherwise signals will be produced that are too loud for the person to tolerate. If this factor is not considered and uncomfortably loud signals are received by the person, he will tend to turn down the volume of the aid and, therefore, will not receive the needed gain for low intensity signals.

Aside from considering the type of hearing aid and the appropriate electroacoustic characteristics, every effort should be made to give the child binaural amplification (Markides, 1978). There are very few instances in which binaural amplification cannot be used. Some advantages of binaural aids are the ability to localize a sound source, hearing with both ears, and better discrimination of speech in noise. These advantages outweigh any question of the expense of two hearing aids. The purpose of amplification is to enable the child to make maximal use of his residual hearing, and maximal use means both ears.

FM Systems

Although a child may have two appropriate personal hearing aids, there are times, especially in school, when listening with a hearing aid is difficult. Noise, distance, and reverberation are detrimental to aided listening (Ross, 1978; Ross & Giolas, 1978). (The problems of these factors and their effects upon hearing aid usage are discussed in detail in the section on classroom acoustics.) In school, a child usually can benefit from a wireless FM auditory trainer (Ross, 1977).

The FM system consists of two units, one worn by the child (FM receiver) and one worn by the teacher (FM transmitter). The teacher's unit is a microphone and an FM transmitter; the signal is picked up by the teacher's microphone, transformed into a radio signal, and transmitted to the child's

receiver, thus virtually eliminating the effects of noise, distance, and reverberation.

The FM receiver is typically worn by the child on the chest. The receiver has the components and characteristics of a hearing aid with the addition of an FM receiver. FM units are designed with three variations: (a) for use solely as a hearing aid (the environmental microphones on the child's unit receive acoustic signals); for use solely as an FM receiver (the child's unit receives only what the teacher's unit transmits); and (c) for use as both a hearing aid and an FM receiver. In the last condition, the unit should be set so that the FM signal is always louder than the signal received through environmental microphones.

As with personal hearing aids, the audiologist selects the proper setting of an FM unit according to the electroacoustic needs of the child. Because the units are quite flexible electroacoustically, they are appropriate for the variety of hearing losses that are demonstrated by hard of hearing children in regular schools. It is important that the IEP include the provision of an FM system to insure the best acoustic signal for the child as often as possible. Either the audiologist or school speech-language pathologist should instruct the classroom teacher in the appropriate use of the FM system. Examples of appropriate and inappropriate FM use are shown in Figures 3 and 4.

The FM system described here is the conventional model but optional models are available. They are particularly attractive to the adolescent who does not want to use the chest worn type. Smaller student units have been designed to be worn on a belt or carried in a pocket. Other available modifications are the smaller units that adapt to the child's personal ear level hearing aids through plug-in cords or make use of a magnetic induction loop which the child wears around his neck. With the latter system, the hearing aid is set to "microphone/telephone" and the child receives environmental sounds through his hearing aid and the FM transmission through the telephone circuitry of the aid (the FM signal is converted to an electromagnetic field emanating from the loop). The major disadvantage of the modifications that employ hearing aids is that when the child's hearing aid is broken or not functioning properly, the FM system is affected, leaving the child without proper amplification. Yet, if these systems are requested by the child, their use in the school situation is more effective than personal hearing aids. (The use of a personal loop with an FM system is recommended only when this is the only way the child will use an FM system.)

The frequency response characteristics of any amplification system have an important relationship to speech perception. Most of the acoustic information that is necessary to perceive consonants correctly is high frequency in nature. If the amplification system does not amplify and reproduce high frequencies well, particularly those above 3000 Hz, the child may hear only part of the acoustic signal and have difficulty in the correct discrimination of speech. Those of us with normal hearing have only to consider the difficulty we have discriminating /f/ and /s/ over the telephone (which does not

reproduce high frequencies very well) to understand some of the difficulties the hard of hearing child has when using amplification. Additionally, the /s/ phoneme in particular, either when pronounced as /s/, following a voiceless consonant, e.g., "cats", or as /z/, following a voiced consonant or vowel, e.g., "cabs", "cars", carries a very heavy grammatical load. The /s/ is used to mark pluralization, possession, third person singular, and contractions of many kinds. There is no doubt that a child will more efficiently learn these structures when he can hear the associated acoustic cues.

TROUBLESHOOTING AMPLIFICATION SYSTEMS

Since good auditory management is dependent upon properly functioning amplification systems, it is important that they be checked daily (troubleshooting) to determine if any problem exists and, if so, how it can be remedied. Generally, the IEP designate is considered to have the responsibility for troubleshooting the FM system and hearing aids daily. Regardless of who assumes the responsibility, it should be carried out at the beginning of each school day. Any questions about troubleshooting or the functioning of the amplification systems should be directed to the audiologist.

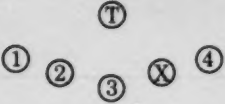
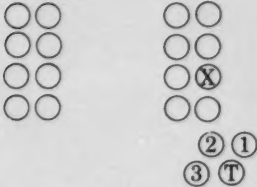
	Ⓟ holding microphone ⓧ using both FM receiver and environmental microphone Reading group: teacher passes microphone to each child who reads, or repeats the answer if the microphone is not passed.
	Ⓟ wearing microphone but it is shut off ⓧ using environmental microphone The teacher is talking to ①②③ and the rest of the class is doing seatwork.
	Ⓟ microphone is on ⓧ only FM receiver is on Small group at work; rest of class at play. The teacher passes the microphone to the children when they speak, including ⓧ.

FIGURE 3. Appropriate Use of an FM System in the Classroom. T = teacher; X = hard of hearing child; 1,2,3,4 = other children.

	(T) microphone on (X) both FM receiver and environmental microphone are on (T) asks (2) to read from the social studies book (3) reads next (T) asks (X) a question (X) does not know the answer (1) gives correct answer softly (T) says "correct" (X) still does not know the answer
	(T) microphone on (X) both FM receiver and environmental microphone on (T) conducts a reading group (T) asks (1) to read out loud (X) is asked to continue where (1) left off (X) starts in wrong spot
	(T) microphone on (X) both FM receiver and environmental microphone on (T) conducts a reading group (X) does seatwork
	(T) microphone on (X) both FM receiver and environmental microphone on (X) playing with blocks with (1) and (2) (T) helps (3) and (4) with alphabet cards (X) does not respond verbally to (1) and (2)

FIGURE 4. Inappropriate Use of the FM System in the Classroom.
 T = teacher, X = hard of hearing child; 1, 2, 3, 4, 5, = other children.

The only equipment needed for troubleshooting is a hearing aid stethoscope and a battery tester; it is also a good idea to have a supply of extra batteries, cords, and transducers on hand. The batteries should be tested to see that they are registering the proper voltage (most ear level hearing aids use 1.4 volts); if not, they should be replaced. The earmolds should be checked to see that the plastic tubing is not cracked or that the opening in

the canal is not blocked with wax. If the tubing is cracked it should be replaced or feedback will occur. If the earmolds are dirty, they can be washed (minus the hearing aid, of course) in warm water.

When listening to the hearing aid, the troubleshooter is interested in how clear the signal sounds, whether distortion or static is present, and in estimating how much amplification is being produced, e.g., if the child has a severe hearing loss, a person with normal hearing should not be able to turn the volume up to maximum and listen comfortably. Any problems in these areas will necessitate sending the aid out for repair. Checking the volume control is also important; the signal should gradually get louder as the volume is increased rather than jump from no amplification to maximum amplification. When troubleshooting a body hearing aid, the listener should also manipulate the cords to determine if the movements produce static or an intermittent signal; if they do, the cords should be replaced. With an FM system, the troubleshooting should be carried out for all conditions to insure proper functioning of the environmental microphones, teacher's microphone, and FM receiver.

When troubleshooting is completed, it is a good idea to have the child put on the different systems to determine if the ear molds fit properly. If there is feedback or the mold visibly does not fit, a recommendation should be made to the audiologist to take new ear impressions so that new earmolds may be purchased. An increasingly necessary item for the troubleshooting of amplification systems is an electroacoustic hearing aid analyzing system. This unit provides the professional with a detailed analysis of the operating characteristics of a child's amplification system, if a listening check has indicated a possible problem. The relatively low cost of the newer analyzing systems on the market make them a desirable inclusion in any school system that enrolls a moderate number of hard of hearing children and employs an educational audiologist.

CLASSROOM ACOUSTICS

Knowing about the child's hearing loss and his amplification is important, but they must be considered in the context of the acoustic environment in which he must function in school. The three conditions affecting listening through amplification (noise, distance, and reverberation) are unavoidable in the average classroom, although their detrimental effects can be minimized (Ross, 1978; Ross & Giolas, 1978).

Distance

The distance of the sound source from the listener's ears or, in the case of the hard of hearing child, the microphone of his amplification system, affects the intensity of the signal that will be received. The farther away from the sound source, the less intensity the sound will have; therefore, the farther the teacher is from the microphone of the amplification device the weaker

and poorer will be the signal the child receives. In the typical classroom, the teacher does not always stand in one spot in the front of the room to present material; therefore, preferential seating will not always benefit the child. When a class discussion is being carried on, the child with a hearing aid will have difficulty hearing the children across the room and may completely miss or misunderstand some information.

Noise

The ambient noise level in an average classroom is approximately 40dB HL (60dB SPL) in intensity, although much more in some cases, while normal conversational speech is approximately 45dB HL (65dB SPL) in intensity; the speech signal is generally, therefore, only 5dB more intense than the background noise. This signal to noise ratio (S/N) affects how well a person using amplification understands speech. In the typical situation given above the S/N equals +5dB; that is, the speech is 5dB greater than the noise. For those of us with normal hearing this is not a difficult listening situation, but for the hearing impaired child using a hearing aid, it is.

The optimal S/N for speech discrimination for hearing aid users has been demonstrated to be +20 to 25dB. The S/N in the average classroom does not come close to that optimum. In worse than average noise levels, e.g., if the physical education class is outside the room and the windows are open, the problem is compounded. Unfortunately, noise and distances are related; the greater the distance from the sound source the worse the S/N. It has been estimated that with normal ambient noise, the S/N will be +18dB at 1 foot and +24dB at 6 inches from the sound source; at greater than 1 foot distance the S/N deteriorates significantly. Therefore, for the child wearing a hearing aid in the average classroom, the teacher or other students would always have to be between 6 inches and 1 foot from the child's hearing aid for him to receive an acceptable S/N (20-25dB). We know that such closeness is not possible. However, by using an FM system, the problem of both noise and distance can be remedied.

Reverberation

The repeated pattern of reflected sound within an enclosed space (a classroom) makes speech discrimination difficult. Good speech discrimination depends upon hearing the consonant information correctly, with many of the acoustic cues for consonants located in the high frequencies. The vowels are of lower frequency but they have greater intensity than the consonants. In a reverberant classroom, the sounds with the greater intensity (vowels) are prolonged and tend to mask out those with less intensity (consonants). Examples of difficult listening situations for a child with a hearing aid are shown in Figure 5.

Some modifications that control for noise, distance, and reverberation include acoustic tiles on the walls and ceiling, carpeting on the floor of the

classroom and in adjacent corridors, and draperies on the windows. Other factors, such as the placement of the hard of hearing child's classroom away from noisy environments, e.g., cafeteria and gymnasium, can be considered. These remedies and the use of a wireless FM auditory trainer improve the acoustical environment for the hard of hearing child in the regular school.

THE PUBLIC SCHOOL AUDIOLOGIST

The complete audiological management of the hard of hearing child combines the responsibilities of audiological assessment, amplification assessment and recommendation, and educational recommendations. Being part of the school system allows the public school audiologist to work closely with the speech-language pathologist and other direct service personnel who are responsible for the education of hard of hearing children. Since the public school audiologist functions in both clinical and school settings the following services should be provided:

1. The complete audiological evaluation.
2. Onsite evaluation of classroom acoustics, including recommendations for physical room assignments and remedies for acoustic problems.

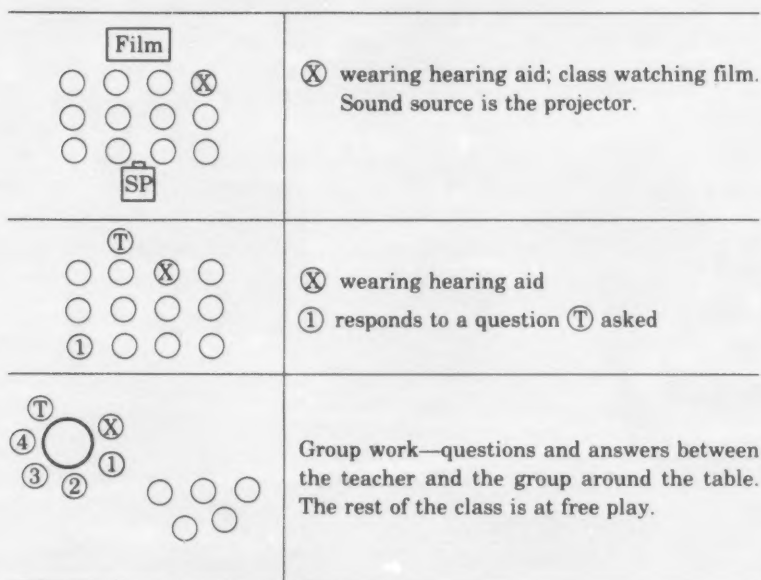


FIGURE 5. Classroom Situations that Make Hearing Aid Usage Difficult. T = teacher; X = child wearing hearing aids; 1, 2, 3, 4 = other children; SP = sound movie projector.

3. Onsite evaluation of amplification use and troubleshooting, including suggestions for improvement, and taking of earmold impressions.
4. Recommendations for wireless FM auditory trainers, if one is not being used.
5. Inservice training on hearing loss and amplification for classroom teachers, speech-language pathologists, school nurses, administrators, and other direct service personnel who interact with the hard of hearing child.
6. Providing trials or loaner FM equipment when necessary.
7. Recommendations for changes in amplification systems when necessary.
8. Recommendations for changes in educational placement when necessary.
9. Emergency help for any problems that may arise between visits to the school.
10. Supervision of the entire public school hearing-screening program.

The rationale for the presence of the public school audiologist on the educational scene is that he has the most competence to help the hard of hearing child attain the most effective use of his residual hearing—his most important avenue for learning. IEP's are not complete for the hard of hearing child in the public school unless the audiologist's ready physical and administrative access to the child is written into the IEP and insured in practice.

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Assessment and Management of the Preschool Child

VERNICE L. JURY

"Will he talk?" "Will he need a special school?" These questions are among the first asked by most parents when the presence of a significant hearing loss has been confirmed in their infants or toddlers. Unfortunately, they are questions we cannot answer with certainty at that time. Other questions must be answered first for each child: "Will he learn to make good use of his residual hearing?" "How much residual hearing does he have?" "Is the hearing loss stable or will the child lose more hearing?" Most important, "Will his family be able to understand and carry out the auditory, language, and speech stimulation that must become an integral part of the life of every hearing impaired child?" We know that the answers to these questions will affect the child's future performance and may well determine whether the child is educated with normally hearing children or is destined to spend many years in separate programs for hearing impaired children. So we give the parents of those infants or toddlers answers that are less specific than the "yes" or "no" they probably would like to hear.

Outlined in this chapter is the kind of programing that is most helpful in fostering the parents' involvement in their child's development and in increasing their understanding and acceptance of the child's hearing loss. Optimally, such programing results in the child's maximal use of residual hearing and the maximal growth of speech and language skills while the child develops as normally as possible in the nonlanguage areas during his infant, toddler, and preschool years.

Infants and preschool children who are identified as having significant hearing losses should be enrolled in some type of aural habilitation program. These programs are conducted in a number of settings: hospitals, private or public schools, and community or university speech and hearing centers.

Young children may be enrolled in parent-infant aural habilitation programs through direct application by the family or referral by a social or educational agency or physician. Regardless of who initiates the referral, pediatric and otological examinations are mandatory to clarify the child's diagnostic profile and medical treatment needs.

The major responsibility for such programs rests with the family and the aural habilitation center until the child reaches the age of 3; then, the provisions of Public Law 94-142 take effect and the child's educational needs become the responsibility of the local education agency. However, it is during the early years that the parent-infant program establishes the appropriate links between the family and the state and local educational and human service agencies that are responsible for providing ongoing educational programming for all handicapped children. Some of the necessary contacts made through the parent-infant program include the local educational agency that, eventually, will be responsible for the child's schooling; the appropriate state agency (e.g., crippled children service, public health, or rehabilitation agency) through which amplification devices are obtained; and the regional or local children's advocacy agencies. These agencies will support and continue the total educational programming options that are available for a hard of hearing child when he becomes eligible for the services mandated by Public Law 94-142.

An infant aural habilitation program focuses on both parents and child; that is, it guides the parents in facilitating their child's development in all areas. The program is far more than therapy sessions twice a week for half an hour or automatic placement of the child in a class of hearing impaired toddlers. It may include home visits or clinical or demonstration home visits and a regular schedule of parent education and support group meetings (not to be confused with PTA, PTO, or Parents' Association meetings). Audiological management of the child, including ongoing evaluations, hearing aid selection and followup care, and frequent monitoring of middle ear status, is an essential part of the program.

The primary members of the program staff usually are such professionals as speech-language pathologists, audiologists, teachers of the hearing impaired, parent educators (people specifically trained to help parents to carry out home stimulation programs), and social workers. Other professionals, such as pediatricians, otologists, psychologists, and child development specialists also may contribute their skills to the program.

One member of the parent-infant program serves as the primary contact for the parents. This clinician, who may be almost any one of the primary team members, must have a good professional foundation in such areas as hearing impairment, hearing aids, language and speech development, child development, and counseling. This clinician is usually an audiologist, teacher of the hearing impaired, or the speech-language pathologist. He sees the parent and child most often, provides most of the specific information to the parents, and is a concerned listener. Like all good clinicians, this professional must be adaptable and nonjudgmental; must refrain from imposing

personal values on the families; and must not present himself as a dogmatic authority. Families need warm supportive professionals to help them come to terms with the feelings of shock, denial, isolation, guilt, and anxiety which can easily overwhelm them when they are confronted with the reality of a hearing impaired child (Luterman, 1979).

As soon as the child's hearing loss has been identified, the clinician should call the parents and schedule the initial appointment—ideally, a home visit—within a week. The clinician must be available immediately to provide support and information to the family that is trying to adjust to a condition that will result in permanent changes in the members' lives. Thus, a parent-infant program is a 12 month program; it cannot operate according to a typical school calendar.

Immediately after the hearing loss has been identified, the child is provided with appropriate amplification—personal hearing aids, usually. Although the audiologist recommends specific hearing aids, other members of the team, especially the speech-language pathologist or parent educator, should be qualified to answer basic questions about hearing aids, to troubleshoot them, and to provide the parents with practical tips for facilitating hearing aid usage at home. The child should be wearing his hearing aids full time within a few days after receiving them.

INITIAL DESCRIPTION OF COMMUNICATION SKILLS

The initial evaluation/description of a young hearing impaired child's communication skills should be made soon after the hearing loss is identified. Ideally, the assessment should be conducted by the clinician who will have the ongoing relationship with the family. The initial evaluation is not designed to obtain a large battery of test scores or to determine the age level at which the child is functioning; rather, it is the first of a series of consultations that enables the clinician to describe the child's auditory, language, and speech skills and to make specific suggestions to the parents for stimulating the further development of those skills. All information about language relates to normal language acquisition as it is currently outlined and defined by psycholinguistics (Kretschmer & Kretschmer, 1978).

An important procedure throughout the guidance program is the recording of the child's auditory and language development. Through careful detailed questioning by the clinician, a description of the child's language is elicited from the parents. The clinician then demonstrates how the parents can date and record this information in a form that is workable for them. These records can be as simple as lists of sounds and words the child understands and uses or as rich as a more detailed narrative. These records provide parents and clinician with a good view of the child's rate and style of language acquisition.

THE HOME AS LANGUAGE CENTER

Initial visits are most easily conducted in the family home. Among the several practical reasons are the problems of travel, other children in the family, lack of babysitters, and whining siblings who interfere with good parent-clinician conversation. The age of the hearing impaired child is also a factor. Infants and toddlers have eating and sleeping schedules that can cause nightmares for clinical scheduling because everyone cannot be given a 9:30 or 10:00 a.m. appointment.

Even more important than the practical reasons are the philosophical ones. By making home visits, the clinician communicates to the parent that the home and not a school or clinic will continue to be the center of the young child's life. The family is the primary focus; the clinician is a guest who provides information, help, and support but is not personally responsible for providing the stimulation and discipline that will help the child to become a well rounded communicating human being.

The home is also a better learning laboratory than a clinic or school. It is the center of the young child's life, and the language he already has or the language he most immediately wants or needs to learn is at home. Home has his favorite people, foods, and activities already available. The clinician's job is to help the parents to turn the naturally occurring and recurring scenes of daily life into language learning events.

AIDS IN THE DESCRIPTION OF COMMUNICATION SKILLS

The goal of continuing assessment is to describe the child's current level of functioning and to interpret this description to parents in terms they can understand. Many checklists, tests, and scales are commercially available to aid in the description of a young child's language skills. Two of the most helpful are not standardized tests (they are not especially useful for describing the language skills of young hearing impaired children) but highly organized checklists that describe many aspects of language and speech development. The two checklists are as follows:

1. *Parent-Infant Communication* (Sitnick, Rushmer, & Arpan, 1977). This handbook outlines auditory, receptive language, and expressive language objectives for both parent and child. It makes use of many good resources relating to child development in general and language development in particular.
2. *Curriculum Guide: Hearing Impaired Children (0-3 Years) and Their Parents* (Northcott, 1977). This handbook also provides outlines of auditory language and speech development. Additionally, it contains much useful information on the integration of hearing impaired children into regular nursery schools.

Both guides include suggested methods and forms for accurate record keeping. They also contain extensive lists of suggested readings for parents

and professionals. Both books should be used by anyone conducting a parent-infant program. They are especially helpful to beginning clinicians who must identify both short and long term goals for children.

Current work in psycholinguistics is providing us with a wealth of new information on how to observe, record, and assess a child's communication skills. This knowledge is important because we are primarily concerned with describing and building the child's communication skills within the framework of normal language development.

Any clinician working with hearing impaired children must keep abreast of the rapidly expanding field of child language acquisition. New information is rapidly being acquired and new theories proposed all of which can be applied to the stimulation of normal development in young hearing impaired children. Published tests, texts, and guidelines can become partially outdated or be lacking current significant information by the time they are published.

COMMUNICATION EVALUATION OF THE HEARING IMPAIRED CHILD

Any evaluation of a young hearing impaired child's communication skills should include a description of how the child receives information. Means of receiving information include gestures, situational cues, standard signs (usually by children of deaf parents), and comprehension of spoken words or phrases through speech reading, residual hearing, or a combination of the two. This information can be obtained most easily through parental reports and through observation of parent-child interactions. Young hearing impaired children should not be separated from their parents during a speech and language evaluation.

A child's auditory skills, especially his awareness of environmental sounds and voices, often must be evaluated by parental report as well as clinical observation. Telephones may not ring or neighborhood children may not call to one another during a particular home visit, but parents can learn to accurately report a child's response to such events. With guidance, parents can and should learn to become accurate reporters of their child's abilities.

When a child's expressive skills are assessed, the clinician looks for meaningful use of sounds, gestures, words, or signs. At the beginning stages he also looks for the evolution of normal stages in babbling and jargon that lead up to the first real word. The importance of these stages must be stressed continually to parents and professionals who are so eager for words that they do not foster the babbling and jargon that is necessary for the development of good voice quality and acceptable rate, rhythm, and inflection of speech.

Parents can learn to give very accurate descriptions of their child's expressive abilities. They can imitate the sounds the child uses, demonstrate the gestures that the family, informally and frequently unknowingly, has standardized into signs, and list words or phrases the child says. Without

guidance, parents tend to regard their child as using more complete utterances and being more intelligible than he really is. They will report that a child said, "That's mine," although the child actually had not voiced the /s/. The reason is that they tend to mentally fill in the small missing segments of words. Parents are usually unaware of the degree to which they depend on situational cues and familiarity with their child's utterances to aid comprehension. The clinician must, therefore, train the parents to be accurate listeners.

The clinician should reassure parents that in early stages the use of additional cues for comprehension are acceptable. However, they must understand that, ultimately, speech intelligibility is defined by clinical standards. It is important that speech-language pathologists maintain high standards or they can fall into the trap of defining a better but still quite defective speech attempt as "good speech," thus training parents and children to a low standard.

Clinicians are also watching for the ways in which a child uses language to communicate ideas and concepts and in his understanding of the communication process (pragmatics). Parents must understand the significance of these aspects of language which are so important to functional communication.

PARENT GUIDANCE SESSIONS

Parent guidance sessions have varied agenda. Each session always begins with the clinician's checking the child's hearing aids, no matter how reliable the parents are. Troubleshooting should be reviewed at each visit until the parents demonstrate that they can effectively troubleshoot the hearing aids, and periodically thereafter.

The use of hearing aids during all waking hours should be established quickly. The easiest way is to convince parents to regard the aids simply like articles of clothing that go on first thing in the morning. Full time hearing aid usage should be established within one week of obtaining them. Programs that advocate gradual introduction to hearing aid usage are not recommended.

As parents become better observers of the home environment, they also become more aware of competing sound sources (e.g., a television set or radio that is always on) that interfere with their child's ability to use aided hearing effectively. Listening to tape recordings of speech picked up by a hearing aid under different noise conditions makes parents acutely aware of the effects of noise and distance on hearing aid usage. Such recordings, particularly those made in the child's home with his own hearing aids, illustrate the need to insure that desired speech signals reach the hearing aid microphone with much more intensity than the detrimental noise background.

Specific suggestions for home stimulation should be based on a joint analysis by the parents and clinician of the child's communication status. The

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clinician provides information on the next stages in the development of receptive and expressive skills. He can review language samples and target specific gaps in comprehension and expression. The parents and clinician together decide how the parents can work toward those goals at home between visits from the clinician. The latter may demonstrate with the child some techniques that might be effective to reach a particular goal. The important point is that the clinician and parents are partners working toward mutually agreed upon goals within the matrix of ongoing activities. The parents should not and are not encouraged to carry out specific auditory training or language activities through structured sit down lessons.

Some parents grasp the principles of stimulation quickly and they consistently apply the principles in nearly all verbal interactions with their hearing impaired child. Others may want specific assignments for varying periods of time. Sometimes most parents find it helpful to have examples of language stimulation activities from which to draw. *Our World, Our Words, Experiences* (DeLange, 1976) is a series of three booklets—"Adventures," "Homework," and "Playhouse"—that outline the learning and vocabulary possibilities inherent in many recurring or easily structured home and neighborhood situations. These materials are a frequently used resource in a clinic library for parents.

The handbooks by Northcott (1977) and Sitnick et. al. (1977) trace specific small steps in developing the auditory, language, and speech skills of hearing impaired infants and preschoolers; they are useful for planning relevant auditory language and speech programs. Of course, no one outline provides a curriculum that works with all hearing impaired children and their families; as with all other materials, the clinician must be selective.

DIFFERENTIATING BETWEEN THE AUDITORY AND VISUAL CHILD

This chapter is oriented to a strong auditory-oral approach with young hearing impaired children. This approach stresses the acquisition of language and speech through aided residual hearing. Certainly all children with mild to severe losses and those profoundly impaired children who have hearing across the frequency range should be provided with the opportunity to learn to depend on their hearing for language development.

There is only one valid criterion for determining whether a child continues in a primarily auditory-oral program—the adequacy of the child's language and speech development. Degree of hearing loss, age of identification, family involvement, and other problems may affect the child's language and speech status. Although these factors may influence performance, the ultimate criterion is still the child's language and speech skills developed through the use of audition and supplementary cues, such as speech reading.

The clinician does not look only for good language and speech development but, also, for social and emotional growth that parallels the normal as closely as possible. Poor language development can cause or aggravate social,

emotional, and learning problems. In order to minimize these problems, it is important that we determine which children are or can function as hard of hearing and which are or function as deaf and are not candidates for a primarily auditory-oral approach so appropriate communication alternatives can be recommended for them. Parents must understand that they are the ones who, with professional guidance, make final decisions on the communication style their child will use.

Other than actual performance, hard and fast criteria cannot be established for separating children into the categories of hard of hearing and deaf. Generally, the child should depend primarily on his hearing for language comprehension after one year of good management. He should have begun to develop language that is similar to normal in its developmental stages, although somewhat delayed. Between 2 and 3 years of age, the child should begin to follow some directions and conversation through hearing alone. He should have a good voice quality and should demonstrate good to normal rate, rhythm, and inflection in his jargon and utterances. These children will want their hearing aids on all the time, perhaps even when they go to bed. They are likely to show behavioral or vocal changes when their hearing aids are not working properly or when they experience temporary shifts because of middle ear disease. Again, it should be stressed that this behavior is not restricted to children with mild to severe hearing losses. Many profoundly hearing impaired children are functionally hard of hearing.

PARENT SUPPORT

Another vital part of the parent-infant program is regularly scheduled education and support group meetings. These meetings should be held at frequent, regularly scheduled intervals. Many clinicians find it helpful to schedule individual conferences and group meetings on alternate weeks; thus a group meeting is held every two weeks.

Goals of the parent education program include providing specific information on hearing loss, including types of loss, different audiograms, and the use and misuse of hearing aids. Information on middle ear diseases and their diagnosis and an explanation of tympanometry and treatment should also be presented. An overview of normal language and speech development and the effects of hearing loss on speech and language development are additional essential topics. Different approaches for presenting language to hearing impaired children, including an unbiased explanation of such terms as *auditory-oral*, *speech reading*, *graphics*, *signs*, *fingerspelling*, *total communication*, and *cued speech* are necessary.

Parents need information about the normal motor, social, emotional, and cognitive development of children. They need to know how, if at all, such development is affected by the hearing loss. Parents also want to hear from and question the parents of older hearing impaired children as well as hearing impaired adolescents and adults.

Another important function of the group is to provide emotional support. Parents must work out their feelings, fears, and attitudes in an accepting environment before they can deal effectively with their hearing impaired children. It is only when parents have begun to come to grips with their child's hearing loss and to realize its lifelong implications that they can mobilize themselves to help their child to develop his full potential as a human being.

NURSERY SCHOOLS FOR HARD OF HEARING CHILDREN

Enrollment in nursery schools is considered for most hard of hearing children when they are between 3 and 4 years of age. Assuming that an effective parent-infant program has been in operation, early placement in nursery school offers many advantages to both the families and children.

Four types of nursery school placements may be considered for the hard of hearing child. The first is a class sponsored by the local educational agency in which all children with special needs are grouped together. Because of the variety of disabled children, the class rarely can meet the needs of hearing impaired children and is usually not considered an appropriate choice.

Of the remaining types of nursery school arrangements, the first two are available generally and the third is less common but is potentially the most effective. They are (a) the regular nursery school, (b) the preschool for hearing impaired (usually deaf) children, and (c) the integrated program within a special education facility.

The local educational agency and parent-infant program clinician meet to review with the parents the child's development and evaluate his potential for successful enrollment in the least restrictive nursery school environment. With this meeting, the hard of hearing child becomes part of the official state "Child Find" program by (a) participating in the school system's early childhood screening program, (b) being referred directly to the school system's special services, (c) becoming known to the appropriate regional state education agency office, or (d) following whatever other avenue is appropriate to a particular state. The selection of the appropriate early childhood or nursery school program is focal to the individualized education program (IEP) process for the hard of hearing child. The decisions on appropriate placement are made by the parent-infant program coordinator, the parents, and the members of the IEP team who will monitor the child's progress. Thus, it is imperative that parents be helped to establish a relationship with the school system because the latter will be legally responsible for the child's education for many years.

In as much as nursery schools vary greatly in goals, staff, students, and orientation, not every school is appropriate for every hard of hearing child. The choice of a nursery school for a specific child should be made with the full participation of the parents. Usually, the clinician will work with the local educational agency in investigating nursery school possibilities. The

parents also should be asked to observe and comment on any program being considered. Parents should understand how the school functions, what their child is likely to gain from the experience, the availability of supportive help, and the extent of their involvement in the program. When complete information about the child and possible school placements has been gathered, the local educational agency team, parent-infant clinician, and parents then make the joint decision on nursery school placement. Only when the child actually enters nursery school should he be discharged from the parent-infant program.

Usually, the minimal criterion for enrollment in a regular nursery school is that the child speaks, using word combinations of two to four words. Children with this level of expressive language are able to comprehend simple directions and conversations and have a functional, though not necessarily age adequate, receptive vocabulary.

Regular Nursery School

Many hard of hearing children are enrolled in regular nursery schools. One reason may be the absence of classes for hearing impaired children within commuting distance of their homes. However, there are positive reasons for placing hard of hearing children in regular nursery schools. The most important is exposure to children with normal thought processes, behavior, and language and speech skills. Such exposure is expected to provide the potential for normal peer interactions, involvement in normal young children's interests and folk heroes, be they Mickey Mouse or *Star Wars*, and opportunity to experience normal behavioral expectations. It is hoped that interactions with normally hearing and speaking children will encourage the hard of hearing child to practice and develop his less than perfect speech and language skills. To achieve these desired goals, a competent, cooperative teacher, skilled parents, backup supportive personnel, and a functioning hard of hearing child are required.

To aid successful integration in a normal nursery school the local educational agency must provide a consultant to the nursery school. This consultant is usually the speech-language pathologist who is regularly seeing the child for therapy and providing further language stimulation suggestions to the parents.

The speech-language pathologist aids in making the nursery school placement successful by serving as an advisor to both the parents and teacher. He should provide the teacher with specific information on the hard of hearing child, including what the child can hear in functional, not audiological, terms. He must also take cognizance of the classroom acoustics and explain to both teacher and parents the ways in which poor acoustics will interfere with the child's hearing. Furthermore, the speech-language pathologist should give the teacher examples of directions and stories that may or may not be understood by the child.

Some facilities, parent-infant programs, or local educational agencies find it helpful to conduct parent-teacher workshops to provide general information on preschool hard of hearing children. A panel made up of parents and successful nursery school teachers can answer many questions and allay most fears.

Certain responsibilities should not be expected of the nursery school teacher. Caring for the hearing aids is one. Although the teacher should be given information about hearing aids, the parent retains the responsibility for insuring that the child is wearing working aids. However, the teacher can be expected to insert earmolds because they come out sometimes and many small children cannot insert their own earmolds properly.

The nursery school teacher should not be expected to teach or sometimes even to reinforce *specific* language or speech goals. These goals are the parent's and speech-language pathologist's; including the goals in the nursery school activities could interfere with the normal routine. After the initial orientation, the speech-language pathologist should visit the nursery school at least at monthly intervals to observe the child and how he functions within the setting, and to give positive support and reinforcement to the preschool teacher. The extensive information on the placement of hard of hearing children in regular nursery schools in Northcott (1977) can help to prevent problems that may arise from the lack of good parent-staff communication.

Class for Hearing Impaired Children

The most common alternative to the regular nursery school for the hard of hearing child is a preschool class for hearing impaired, mainly deaf, children. In this setting, it is assumed that the teacher is ready to provide the child with needed language building activities. It is also assumed that consulting audiologists have guided the school in constructing an acoustically sound classroom and provide ongoing audiological and amplification support. In addition, the school is expected to carry out a continuing program of parent education.

One major ingredient missing from this seemingly ideal arrangement is normally hearing children. Some advantages of integrating hard of hearing with normally hearing children have been cited; other reasons for having normally hearing children present are directed to staff members. The presence of normally hearing children keeps teachers aware of the standard against which hard of hearing children will be assessed when a less restricted environment is considered at a later date. Without constant exposure to normally speaking children, teachers may develop false, lower standards of language and speech development. It is easy to forget how quickly normally hearing children learn new vocabulary, construct grammatically complete sentences, and acquire intelligible speech.

Also, in a classroom with only deaf children, practices may develop that do not accord with what is known about normal child development. Such

practices include keeping young children sitting for long periods of time and admonishing the 3 to 4 year old who cannot sit still for a 20 to 30 minute group lesson. Another practice is expecting these young children to begin reading, although they have not acquired the language competencies upon which reading is based or the conceptual/perceptual capacity to associate orthographic symbols with sound and meaning. In addition, the children are frequently exposed to a structured curriculum that is basically boring and inappropriate for them. Perhaps some nonverbal 3 year old children can be made to sit through "news" (e.g., "John watched TV"; "Mary has a green coat") but most normally hearing 3 year olds would not stand for it and would say so in no uncertain terms.

Integrated Nursery School

The third type of nursery school can be seen as a logical step beyond the first two. In this program, a specially trained preschool staff is put in an acoustically treated classroom; provided with backup services of audiology, otology, child development, and social services; and mandated to carry on an organized program of parent education and support. Then both normally hearing and hearing impaired children are placed in the classroom. This integrated program within a special education facility is still unusual but provides the opportunity for all children to have a unique, enriching preschool experience. Children with all degrees of hearing loss can be appropriately placed in such a class.

The classroom should be staffed with persons who can bring different points of view to the situation. One involved staff member should be a preschool specialist skilled at planning and carrying out activities and presenting materials which are geared to meet the abilities and developmental needs of young children. The other member of the team should be a speech-language pathologist. The smooth and effective operation of the classroom depends on the close organization of these two specialists. With the cooperation of other staff members, including aides and assistants, it is possible to give hard of hearing children an intensive language experience within a normal developmental program.

To carry out the goals of a good integrated classroom adequately, there must be more normally hearing than hearing impaired children. An ideal ratio is 2:1. It is also necessary to have a large enough staff to insure that every child has many adult-child verbal interchanges during his hours in school. The language specialist is responsible for training all staff members to make every interaction with a child therapeutic by outlining the language-learning possibilities inherent in all portions of the school program. It is important that the staff members understand that interactions in the bathroom, closet, or entry hall are as important as any planned activity, and frequently more so.

To make an integrated program truly integrated, the hearing impaired children should be singled out as little as possible. Although their ampli-

fication must be checked, that should be about the only time they are given special attention in the classroom. They should never be taken aside as a group for a special lesson, and they should not attend school when the normally hearing children are not present. Programs in which the hearing impaired children attend school five days while the normally hearing children attend three days per week are not recommended. Such an arrangement tends to foster the formation of two distinct groups and does little to promote integration.

The classroom staff should pick up on the interests and vocabularies of the normally hearing children; that is, rather than constantly adhering to a preset curriculum, time should be set aside to engage in dramatic play about the immediate interests of the children (e.g., firemen, hospitals, or space travel). Hard of hearing children are usually eager to join in the games and dramatic play of their normally hearing peers and so they are highly motivated to learn the vocabulary and concepts quickly. There is no reason to believe that hearing impaired children cannot learn to pretend and imagine along with their normally hearing peers.

A bonus consideration in this type of nursery school arrangement is that the differences between the functioning hard of hearing and the functional deaf child will soon emerge. The children themselves, through their behavior and interactions (or lack of them) with the normally hearing children, reveal who is a primarily auditory and who a primarily visual communicator. The norm in such a nursery school is an auditory-oral communication system; within a relatively short period of time, it can be determined for whom the system is not appropriate and, thus, appropriate alternative placement recommendations can be made.

It is impossible to outline in one brief chapter all the components of comprehensive, high quality parent-infant and preschool programs. However, it is important to remember that the most significant elements in such programs are (a) that language and speech are best learned through hearing and must be the avenue emphasized with hard of hearing children, (b) that the parents and family remain and are regarded by professionals as the most significant people in the child's life, and (c) that the parents are primary managers and decision makers in the child's aural habilitation program.

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Assessment: Adaptations, Interpretations, and Implications

DIANE BRACKETT

A comprehensive assessment of the linguistic, academic, and psychosocial skills of the hard of hearing child is a prerequisite to planning an appropriate educational program for him. Assessment on a regular basis is also necessary to determine whether the recommended program is successfully meeting the specified objectives. Methods of presenting, adapting, and interpreting the assessments are presented in this chapter.

SPEECH AND LANGUAGE EVALUATION

A direct effect of a hearing loss is a language deficit that varies in degree and kind for each hard of hearing child. Therefore, a comprehensive speech and language evaluation is of primary importance. The speech-language pathologist is the professional who is responsible for assessing the communicative skills of the hard of hearing child in the regular classroom. He must synthesize the audiological and linguistic information so that he can transmit the results and implications to the child's teachers and plan and develop a remedial program for the child.

Prerequisites of Evaluation

Prior to undertaking a speech and language evaluation, it is critical to determine whether the hard of hearing child will be compared with other hearing handicapped children, the normally hearing children with whom he must interact in the regular classroom, or both groups of children. It is not uncommon to hear objections to the administration of tests standardized on an unimpaired population. Yet such tests provide much information that is relevant to the functioning of a hard of hearing child in a mainstream

classroom. To assess the child's capability to participate actively in this setting, it is first necessary to determine the skills of normally hearing children that enable them to learn in a regular classroom setting. For example, it has been found that class participation is dependent on a child's ability to process the content material, produce intelligible, well formulated responses to questions, understand teacher questions, and comprehend and produce written material. Therefore, the assessment should include evaluation tools that will measure the hard of hearing child's ability to acquire and use these skills. The important areas of assessment are as follows:

1. Predominant mode for reception of speech.
2. Comprehension of orally presented material, including vocabulary, syntax, and content material.
3. Production of spoken language, including vocabulary, syntax, and usage of language for reasoning.
4. Intelligibility of speech.
5. Comprehension and production of written language.

When the skills to be assessed have been selected, the assessment tools and their modes of presentation must be determined. If the focus is on the hard of hearing child's ability to engage in verbal conversation, the assessment tools should provide information on his expressive and receptive oral language skills, and the mode of presentation should be normal conversation, that is, aural/visual. If the skill to be tested is the child's ability to process the written word, then the use of the written/read mode would be appropriate.

Procedural Adaptations

Adaptations in the oral presentation of a test are required if the child's linguistic rather than hearing ability is to be tested. Thus, amplification must be determined to be appropriate and functional before any testing is started. It also may be necessary to modify the standardized presentation by giving the stimulus items several times and using the additional option of having the child repeat back what he has heard. For example, the stimulus "beam," repeated by the child as "beep," informs the examiner that the child has not perceived the item correctly and, thus, is responding to the "misheard" stimulus rather than the intended stimulus.

Information on the child's specific test taking strategies adds breadth to the description of his communication skills. For example, from some simple questioning on the PPVT, it is possible to determine if the child uses the process of elimination in order to select the correct response (normally hearing children are adept at this strategy). The child can be asked to verbalize his thinking. This same "thinking out loud" may reveal whether the child is using verbal associations as an aid in the selection of the correct response. For example:

Stimulus: "mercantile"

Association: "merchant means someone in a store"

Response: the picture of a store is selected because mercantile must be store related. To determine if the child is mislabeling he can be asked at random the names of some of the choices on each page (e.g., Stimulus: "weapon"; Response: "a gun").

Thus it is evident that the child knows the specific label but not the general category in which the stimulus belongs. All adaptations should be noted in the event replication of the test is desired.

Test Score Interpretation

The interpretation of any test score requires answers to the following questions:

1. *What is the test purporting to measure?*

For example, the Peabody Picture Vocabulary Test (PPVT) is a prime example of a test that has been misused with populations who have difficulty comprehending language. For many years, the PPVT has been assumed to measure intelligence, an assumption that is supported by high correlations with other intelligence tests. (The PPVT forms have a place for mental age and IQ.) However, when it is used with a hard of hearing child, it measures only his receptive vocabulary. The PPVT results do not correlate with the nonverbal measures of intelligence that are used with hearing impaired children; these measures provide the best indication of the child's intellectual potential. Therefore, an interpretation of the hard of hearing child's score on the PPVT as a measure of IQ leads to erroneous conclusions regarding his potential.

2. *How does the child's performance relate to his auditory status?*

For example, if one wants to know whether the Test of Auditory Comprehension of Language is really measuring the child's understanding of morphological and syntactical rules of spoken English, then the child's auditory ability with amplification must be considered. Is the child able to hear the /s/ when it is marking the plural ("coats")? Or does he hear the /s/ but not understand its usage as a plural marker? The child's response on the test item remains the same whatever the reason, of course, but the subsequent remediation is markedly different, depending on the reason. The same rationale must be applied to all the unstressed morphological markers in English—/s/, /z/, /t/, /ed/, /d/, /'s/.

Another pertinent example in the assessment of expressive language is whether the child fails to mark plurals, possessives, and contractions because (a) he omits all final sounds, (b) he does not know, due to his hearing loss, that these unstressed sounds occur at the end of words, or (c) he is unaware of the linguistic relevance of these sounds although he is capable of producing them.

SPEECH/LANGUAGE ASSESSMENT TEST BATTERY

This section outlines a speech and language test battery that has been useful in providing information for the development of a remedial program and for giving regular teachers insight into the communicative inadequacies of hard of hearing children. This battery does not include every available test; those included here were selected because they are available in most school systems. The tests sample the speech and language areas that are most relevant to successful regular school placement. By applying the criteria described in this chapter, it should be possible to evaluate the efficacy of newly developed tests and to decide whether to add them to the test battery. Each test discussed in this section is analyzed in terms of presentation/adaptation, interpretation, and problems.

Analysis of Prominant Mode for Speech Reception

The PBK-50 word list (see Figure 6), which is generally used for discrimination testing in the audiological test battery, can also be used to analyze the hard of hearing child's predominant mode for receiving speech input. List 1 is presented in the auditory only mode, that is, with no visual cues. (Check amplification first to insure that it is working optimally.) The presenter reads a word and the child repeats what he hears. The child receives two points for each correctly spoken response and the total score is written as a percentage (e.g., $28 \times 2 = 56 = 56\%$). List 2 is presented in the visual only condition, that is, the child's amplification is turned off, forcing him to rely on speech reading alone for comprehension. List 3 combines visual and auditory presentations and is equivalent to the child's normal mode of communication.

Presentation/Adaptation

By graphically recording the child's complete response to the speech signal rather than scoring him just right or wrong, an indepth analysis of the child's discrimination errors can be made. A further change in the response mode, from verbal to written, eliminates errors due to articulation insufficiency but introduces additional error due to poor skills in writing and spelling.

Interpretation

The resulting percentage score permits assessing the primacy of the child's visual and auditory channels and the effect of using them in combination. Conclusions can be drawn on the child's (a) use of residual hearing, (b) dependency on speech reading, and (c) integration of auditory and visual modes. By analyzing the child's vowel and consonant omissions, substitutions, and distortions, specific auditory training recommendations can be made.

List 1

1. please	26. smile
2. great	27. bath
3. sled	28. slip
4. pants	29. ride
5. rat	30. end
6. bad	31. pink
7. pinch	32. thank
8. such	33. take
9. bus	34. cart
10. need	35. scab
11. ways	36. lay
12. five	37. class
13. mouth	38. me
14. rag	39. dish
15. put	40. neck
16. fed	41. beef
17. fold	42. few
18. hunt	43. use
19. no	44. did
20. box	45. hit
21. are	46. pond
22. teach	47. hot
23. slice	48. own
24. is	49. bead
25. tree	50. shop

List 2

1. laugh	26. path
2. falls	27. feed
3. paste	28. next
4. plow	29. wreck
5. page	30. waste
6. weed	31. crab
7. gray	32. peg
8. park	33. freeze
9. wait	34. race
10. fat	35. bud
11. ax	36. darn
12. cage	37. fair
13. knife	38. sack
14. turn	39. got
15. grab	40. as
16. rose	41. grew
17. lip	42. knee
18. bee	43. fresh
19. bet	44. tray
20. his	45. cat
21. sing	46. on
22. all	47. camp
23. bless	48. find
24. suit	49. yes
25. splash	50. loud

List 3

1. tire	14. else	27. thick	40. frog
2. seed	15. next	28. if	41. bush
3. purse	16. jay	29. them	42. clown
4. quick	17. raw	30. sheep	43. cab
5. room	18. true	31. air	44. hurt
6. bug	19. had	32. set	45. pass
7. that	20. cost	33. dad	46. grade
8. sell	21. vase	34. ship	47. blind
9. low	22. press	35. case	48. drop
10. rich	23. fit	36. you	49. leave
11. those	24. bounce	37. may	50. nuts
12. ache	25. wide	38. choose	
13. black	26. most	39. white	

FIGURE 6. PBK-50 Word List.

The results provide the teacher with information on how the hard of hearing child will best receive classroom material. For example, the teacher will know if it is necessary to face the child at all times, thus limiting the simultaneous use of the blackboard. Use of an overhead projector could be suggested for the teacher of a primarily visual child. Attention to the noise level in the room or the child's distance from the speaker becomes even more critical when the child is primarily using auditory input for speech reception.

Problems

The instruction to repeat what he hears forces the child to choose from the set of all the words he knows which at least vaguely resemble the word presented. He may repeat the word he thinks it is rather than the sound combination he has actually heard. For example, the stimulus "mouth" may be perceived as "mou," but the child searches his word bank and comes up with "mouth," even though he did not hear the final sound. This phenomenon tends to elevate the score and may cause erroneous assumptions regarding the child's speech perception abilities.

Peabody Picture Vocabulary Test (PPVT)

This test (Dunn, 1965) measures the child's understanding of a single word spoken vocabulary. The stimulus is presented auditorally in the carrier phrase, "Show me _____," and the child selects one of four pictures to represent the stimulus word. The raw score the child receives is converted into a vocabulary age, based on normative data derived from normal hearing children. It is important to check the standard deviation to determine if the score the child received is considered to be within normal limits for his chronological age.

Presentation/Adaptation

It is important to insure that the child hears the stimulus. If it is presented more than once or the child is asked to repeat what he has heard, a note must be made on the form that this modification was necessary and that the norms, therefore, are being loosely applied. By asking the child to verbalize his thinking process and questioning him about the wrong answers, it is possible to carry out an indepth analysis of his performance.

Interpretation

An indepth analysis of the child's performance on the PPVT yields the following information:

1. An overall score that compares the hard of hearing child's performance with that of normally hearing children.

2. Specific information on the error patterns, such as nouns (*shoe, dog, bus*), verbs (*sew, submerge, descend*), categories (*weapon, transportation, appliance*), and occupation titles (*chemist, chef, sentry*).
3. The child's strategies for dealing with unfamiliar material, such as the process of elimination and associative responses.

When explaining the results of the PPVT to the classroom teacher, the child's performance on the test is related to the difficulties he has or will have in comprehending oral content material in the classroom. Such subjects as science and social studies may be especially difficult for the child when new vocabulary is presented at a regular and rapid rate. This vocabulary deficit may also be reflected in the child's lack of attention during oral presentations when he is being bombarded with words he is unable to understand.

Problems

Essentially, the PPVT presents the vocabulary items in isolation, which may create an artificial situation. This format especially affects the comprehension of verbs that are rarely heard out of context.

Test of Auditory Comprehension of Language (TACL)

The TACL (Carrow, 1973) assesses the child's comprehension of the morphological and syntactical rules of spoken English. The word, phrase, or sentence is presented aurally/visually and the child responds by pointing to the picture that best represents the stimulus. The raw score is converted to a language age derived from normative data on normal hearing children.

Presentation/Adaptation

To insure that the child hears the stimulus, it may be necessary to repeat it several times or to ask the child to repeat what he has heard. Two different techniques can be used to present this test to hard of hearing children:

1. Present the morphological markers with normal rate and emphasis ("coats").
2. Present the morphological markers with an increase in emphasis ("coats").

The determination of the presentation technique depends on the desired result. (See *Interpretation* for differences between the two techniques.) This decision must be made prior to administration and noted on the form.

Interpretation

The interpretation of test results is highly dependent on the mode of presentation. When the stimulus is presented at a normal rate and emphasis, the results demonstrate the child's performance under normal conditions. That is, the child may not hear the unstressed markers (/ed/, /s/, /er/) and

responds on the basis of incorrectly perceived stimuli. No generalizations can be made of the child's actual knowledge of the markers under this condition. It can only be said that when the stimuli are presented in a normal conversational manner, the child answers incorrectly. It is not possible to determine whether the incorrect response is due to the hearing deficiency or to the lack of knowledge of the morphological markers.

When the stimulus is presented with an increase in emphasis the results demonstrate the child's performance under optimal conditions. When the child has the opportunity to know that the marker is present, it is possible to determine if he comprehends the morphological information. One cannot say, however, that he is able to perceive the acoustical correlate of this information when it is presented in a normal conversational mode.

Because the child may exceed the relatively low, upper age limit on the TACL, it is not possible to say whether the child possesses the more sophisticated syntactical information that is necessary to handle the highly complex verbal material presented in the normal classroom. If he scores at the ceiling of the test, it can only be said that he exhibits *at least* the competency of a child of 6 years, 11 months (the upper age limit) on this assessment tool.

The results of the TACL have implications for the hard of hearing child's classroom performance. The teacher's awareness of the child's ability to comprehend specific syntactical and morphological forms should affect his assessment of the child's social behavior, his expectations for the child's academic performance, and his (the teacher's) oral presentation of material. It may be that the child's failure to do homework assignments or his inattention during lecture style presentations is due to his poor comprehension of the syntax being used to explain the work. The teacher may find that by reducing the complexity of the instructions, he is able to raise the child's performance.

Durrell Paragraph Listening Test

This comprehension test (Durrell & Brassard, 1970) is used to simulate the auditory and linguistic demands made on the hearing impaired child during classroom presentations or extended conversations in which unfamiliar content material is being transmitted. Graded paragraphs are read to the child after which he must answer eight oral questions based on the content of the paragraphs. The raw score is converted to a grade equivalency derived from normative data on normal hearing children.

Presentation/Adaptation

The test is presented most effectively in a setting that closely resembles classroom environmental conditions. Ideally, it should be presented to the entire classroom of children of which the single hard of hearing child is a member. The test presenter should stand in approximately the same position that the teacher assumes when presenting content material to the class

with the child using his regular classroom amplification. The most convenient (but not necessarily the most informative) manner of presentation is one to one, in a quiet room. Care should be taken to read the paragraphs and questions precisely as they are written, without emphasis on the content words that aid in answering the questions.

Interpretation

Regardless of the method of presentation (whole class or one to one), the norms are applied to estimate how the hard of hearing child compares to same age peers. Whole class presentation offers a beneficial comparison of the hard of hearing child's performance to that of his actual classmates.

The child's strategies in comprehending connected speech of high informational value can be evaluated. Two such strategies may be (a) remembering one or two bits of information from the paragraph in hope that a related question will be asked, and (b) orally repeating pertinent information in an effort to retain it.

In addition, the child may exhibit stressful behavior under a heavy language load, such as inattentiveness as the material becomes difficult to understand and "borrowing" answers from the child in the next seat.

The comprehensive analysis of the results and their implications should be discussed with the child's teacher. The test helps teachers to understand the amount of information the hard of hearing child actually comprehends in the classroom.

Problems

Because the test has no cut off, it is necessary to administer all eight paragraphs, regardless of the child's performance. The test time is approximately 35 minutes. The question format ("fill in the bubble under the correct category with a pencil") permits the child to ignore the paragraph presentation entirely and yet to obtain scorable responses through random guessing. The long stimulus items make it difficult to separate auditory memory and language comprehension.

Developmental Sentence Analysis

This test (Lee, 1974) is used to assess the syntactic complexity of the child's spontaneous spoken language. A spoken language sample is analyzed according to eight grammatical categories which vary from simple to complex levels (1 through 8). A developmental sentence score is obtained by totaling the child's score for each sentence and dividing by the number of sentences obtained.

Presentation/Adaptation

The test relies on a comprehensive sample of the child's spontaneous output. Like any technique that does not require responses to specific test items,

the sampling procedure in this test affects the obtained score.

Although the responses are tape recorded, it helps the examiner to repeat auditorally ambiguous utterances immediately after the child offers them since it is easier to understand the child in person (through speech reading, facial cues, and gestures) than from the auditory cues alone (e.g., when the third person singular is marked by /s/ but it is hard to hear on the tape, the examiner might say, "That's right, he walks up the stairs").

Minor modifications in scoring the language sample make it possible to obtain pertinent information regarding the hard of hearing child's expressive language skills and to design appropriate remediation. Mainstreamed hearing impaired children as a group have been observed to attempt the more complex primary and secondary verb forms (e.g., "could have been," "have been going," "started to fish"), but in so doing they may eliminate part of the auxiliary verb or a critical ending. The fact that they attempt these complex forms is not acknowledged on the score sheet. The mark (-) only indicates that a verb has been attempted and was incorrect and that no points are obtained. Consequently, a much higher score is obtained by the child who successfully uses simple present and past tenses than the child who chooses to express himself in a more sophisticated way, thus making more errors. Also, by indicating the level of complexity of the attempted form (7), it is possible to more completely describe the child's verbal output.

Adaptation of the scoring of the sentence point allows for analysis of specific errors to be made. According to Lee (1974), if some aspect of the sentence is semantically or syntactically incorrect, a sentence point is not given. The hard of hearing child is likely to make more than one error per sentence, but these numerous errors are not reflected in the single sentence point. Also, many errors may be on forms that are not assessed by the test's procedure (e.g., possessives, adverbs, prepositions) and are not considered in the scoring protocol. Thus, it is useful in planning remediation to indicate for what reason the sentence point was lost (e.g., semantic errors, syntactical errors, or both).

Interpretation

The overall score (DSS) provides minimal information on the syntactical complexity of the language used by the hard of hearing child. More information is gained by analyzing the level of complexity within each category. For example, it can be determined that the child produces all his compound sentences by joining two simple sentences with the conjunction "and" rather than using a more advanced conjunction with more subtle shades of meaning. If the child is older than the upper limit of the published norms for the test, then the analysis only serves as a method to compare the child's performance against himself over time.

The teacher should be informed of the level of complexity that the child uses to express himself in a spontaneous situation. Thus, the teacher can

base his expectation for the child's participation in classroom discussion on this level of performance. It may be that the child refuses to talk in class or chooses to use minimal responses in front of his peers.

Problems

The test gives the hard of hearing child credit for using forms which, in fact, mask his linguistic deficiencies. For example, hard of hearing children typically substitute personal and indefinite pronouns for vocabulary when they are unable to come up with the specific words they need. In the Developmental Sentence Analysis procedure, every instance of pronoun usage is scored, which gives the hard of hearing child an inflated complexity score for circumventing his vocabulary deficit. This factor should be considered when interpreting individual categories in the child's performance.

ADDITIONAL TESTS OF SPOKEN LANGUAGE

The selection of one or more additional tests depends upon the deficiencies demonstrated by the hard of hearing child. The more sophisticated the language he exhibits, the more sensitive the tests must be. Most readily available tests sample only those behaviors that signal gross language deficits in children under 8 years of age. In addition to the following suggested tests, some subjective observations of the child's communicative abilities may be necessary to document the subtle difficulties the child is experiencing.

Wechsler Intelligence Scale for Children-Revised (WISC-R)

Vocabulary Subtest

Information Subtest

Comprehension Subtest

Detroit Test of Learning Aptitude (DTLA)

Verbal Absurdities

Verbal Opposites

Likenesses and Differences

Social Adjustment

Test of Auditory Comprehension (TAC)

Test of Language Development (TOLD)

Oral Vocabulary Subtest

Speech Quality

No one test has proved to be sufficiently descriptive of the speech produced by the hearing impaired child. Several methods of evaluating the speech intelligibility of hard of hearing children are described.

Method 1

Rate the child's speech according to specific criteria and score by categories from 1 to 5 (least to most intelligible) (Subtelney, 1975).

Problem: The categories do not effectively differentiate the subtle degrees of articulation deficiency exhibited by the hard of hearing child.

Method 2

Tape record the child as he reads a list of 50 words containing a variety of sounds in different positions (PBK lists are appropriate). The list should be played back to naive listeners (three, preferably) who should write down the words they hear the child say. The child's speech intelligibility score is the percentage of words that the listeners identify correctly.

Problem: This technique is a poor indicator of the intelligibility of connected discourse. Samples of connected discourse produce higher scores than monosyllabic words because of contextual cues.

Method 3

A traditional articulation test is administered using a single word stimulus.

Problem: Focus is placed on the articulation of individual phonemes within a word rather than the whole word. Intelligibility in sentences is not considered.

Regardless of the method used to assess the speech production ability of the hard of hearing child, it is important to transmit the results of the analysis to the regular classroom teacher. He then can develop expectations for optimal classroom performance.

Written Language

Comprehension of Reading Material

This aspect of school performance can best be assessed through a diagnostic reading battery or through academic achievement testing. In addition, Quigley's Test of Syntactic Abilities (TSA) can be used to assess the child's understanding of syntactic rules presented in a graphic mode.

Production of Written Language

A subjective comparison between the child's written and spoken language is needed to determine if the child effectively transfers his linguistic knowledge between systems. Action or "thought" pictures, like those used to elicit a verbal Developmental Sentence Analysis sample, should be used for this informal analysis.

In conclusion, speech and language assessment of the mainstreamed hard of hearing child should consist of tests that sample the skills necessary for adequate functioning in a regular school setting. The results should be used in developing remedial programs as well as to inform the classroom teacher as to the child's optimal communicative abilities.

CLASSROOM OBSERVATION

A comprehensive assessment by a speech-language pathologist of the hard of hearing child's speech and language skills must also be accompanied by observation in the classroom. The act of observing the child as he functions in the regular classroom yields information on the following areas:

1. Participation by the child in classroom activities and discussion.
2. Interaction between the child and teacher.
3. Adaptation by the teacher of orally presented material.
4. Interactions between the child and his classmates.
5. Strategies for learning and processing content material.
6. Use of FM by teacher and child.
7. Analysis of noise sources.

The active process of troubleshooting or analyzing the child's behavior in the classroom results in information on the child's deficiencies. Some examples follow:

1. *Behavior:* "Borrowing from neighbor's paper."

Analysis:

- a. Does the child understand the material being presented?
- b. Does the child work so slowly that he frequently does not finish in time?
- c. Has he given many wrong answers in the past so that he expects failure?

2. *Behavior:* "Does not know what page he is supposed to be on."

Analysis:

- a. Did the child hear the teacher's instructions?
- b. Does he understand the vocabulary involved in the instruction, "Turn to page 141"?
- c. Did the syntax in which the instruction was embodied affect the child's performance (e.g., "When you have finished the boardwork, turn to page 141 and follow the instructions.")?

3. *Behavior:* "Wrong answers on spelling test."

Analysis:

- a. Did the child study the words?
- b. Did he learn the visual representation of the words without hearing the auditory presentation? (Thus, when the teacher presents the word *doubt* or *through* and asks the child to spell it, he can not relate the auditory presentation to the visual form.)

- c. Did he hear all or part of the words the teacher said?
- 4. *Behavior*: "Circled all the answers in the workbook rather than underlining, as he had been instructed to do."
Analysis:
 - a. Did he hear or read the instructions? Perhaps he "eyeballed" the page and proceeded to use a pattern which had been required on a previous page.
 - b. Does he understand the vocabulary or syntax used to convey the instructions?
- 5. *Behavior*: "Staring into space while the lesson is being presented."
Analysis:
 - a. Does he hear the teacher present the material?
 - b. Does he understand the barrage of new material being presented?
 - c. Does he need some visual aids in order to process the material rapidly, or does he require preteaching for familiarization?
- 6. *Behavior*: "Nonparticipation in classroom discussion."
Analysis:
 - a. Does he know the information being requested by the teacher?
 - b. Is he reticent about speaking because he is aware of his speech difficulty?
 - c. Has he learned failure from attempts at participation in the past?

Only after the child has been observed in the classroom can his formal test scores be used to plan a remedial program. Classroom behavior demonstrates the interactive effect of the hearing loss, use of amplification, and language abilities. Classroom observation is the most neglected yet the most useful form of performance assessment that is available.

ACHIEVEMENT TESTING

To further define the hard of hearing child's performance in the classroom setting, some estimation of his academic achievement is necessary. School systems vary in frequency of test administration, kind of achievement testing, and personnel designated to do the testing. It is suggested that the hard of hearing child be given an achievement test (standardized on norms) on a yearly basis by a professional who is qualified to assess the abilities of children with special needs. Some opponents of "tests" insist that a child's test performance is not an accurate description of what he has actually learned, that it only provides an estimate of how he handles test information. Even if one were to accept the premise that tests do not measure what a child has actually learned in the classroom, it is still possible to compare the child's performance on test material with national and local norms as well as with his previous scores to derive an estimate of how he is functioning in relation to the normally hearing population.

Several major limitations affect the use of achievement tests. Most achievement tests are group administered, which eliminates any opportu-

nity for the teacher to observe individual pupil performance. Valuable information is lost regarding how the student solves math problems, analyzes words, retains material read, spells, and performs other tasks. The scores give little information on how they were obtained. Group administration also makes it difficult to insure that the hearing impaired child has understood the directions and is performing under optimal conditions. Individual or small group testing is recommended to bypass any difficulties that the hearing impaired child may have in understanding the instructions. It is important that the test selected be the same as that which is administered to the other children in the school so that appropriate comparisons can be made. If any condition of administration is altered (e.g., time limit), it should be noted and the results interpreted accordingly. However, the norms may not then be applicable to the child.

A further consideration is necessary when the test results are analyzed. Interpretation of each subtest score is highly dependent on the format of the subtest (reading vs. oral dictation or "fill in the blank" vs. "identify correct/incorrect responses") and the actual skill being assessed (punctuation, grammatical usage, spelling, reading vocabulary, listening vocabulary). In the following examples, the subtests of four commonly used achievement tests—California Achievement Test (CAT), Iowa Test of Basic Skills (ITBS), Metropolitan Achievement Test (MAT), Stanford Achievement Test (SAT)—are compared by task. Analysis of each subtest's content reveals that the assigned label does not fully reflect the content or the format of the test.

Vocabulary

CAT—a stimulus word is read by the child who is then asked to select from four alternative words the word with the same meaning.

ITBS—same

MAT—same

SAT—teacher dictates test that measures vocabulary independent of reading ability.

Spelling

CAT—the student selects which of four responses best fits a blank in the sentence.

ITBS—(subarea of Language) measure of recognition in which child identifies one of four words as the correct spelling of a word read by the teacher.

MAT—student is required to write words dictated by the teacher.

SAT—each item consists of four words, one of which is misspelled; the child must identify it, based on his knowledge of phonology and morphology.

Language Usage

CAT—the student selects which of four possible responses best fits the blank in the sentence.

ITBS—by requiring the child to identify which of three sentences is correct, his knowledge of grammatical rules is assessed.

MAT—no individual test is employed. An overall category—Language—combines usage, knowledge of rules for punctuation, and capitalization. The hard of hearing child receives an inflated overall language score because the language based "Usage" (difficult) is combined with two analytic skills, punctuation and capitalization (easy).

SAT—language usage is a subtest of the general category, Language Arts; it reflects the relationship of parts of sentences.

Someone (preferably the speech-language pathologist) must synthesize all the test results that bear upon the child's communicative, educational, and psychosocial performance. Accurate interpretation of the subtests is important to determine the interrelationship of the hard of hearing child's assessed language competence and academic achievement. The performance analysis should then be reported to the child's teacher and other concerned personnel so that it can be related to his day to day school behavior. It is only when the analysis is conveyed to the educational providers and its implications are translated for use in the classroom that the entire evaluation process is justified.

PSYCHOLOGICAL TESTING

It is common for schools to administer group intelligence tests at regular intervals throughout a child's school career. These tests unduly penalize the hard of hearing child when they combine both verbal and performance items in a single IQ score. An individual performance IQ test, administered by a professional who is qualified to test children with special needs, provides the desired information on the child's potential for learning while minimizing the effect of his disability on performance.

Because most school psychologists have had only theoretical exposure to the hearing impaired population, it is important to preview with the examiner the potential problems inherent in administering and scoring tests for measuring the intellectual potential of a hard of hearing child. The basic concept to understand is the necessity to use a test that separates verbal and performance items into individual subtests on which separate scores can be obtained. The Wechsler Intelligence Scale for Children (WISC-R) is a commonly used and readily available individual IQ test on which a performance IQ can be obtained. It is possible to bypass the child's disability and obtain an accurate description of his potential by presenting only the performance subtests.

The verbal subtests provide useful information on how the hearing impaired child handles verbal material but the scores should not be reported as a "verbal IQ score" or combined with the performance score to obtain a full scale IQ score. The child's performance on individual subtests provides only a profile of his verbal strengths and weaknesses.

Examples of the WISC Performance subtests and what they purport to measure follow:

Picture Completion—identify missing parts of pictures. The test contains some verbal overlay since the child must understand the concept that something is missing in the picture; this idea can be explained through demonstration and gesture to the child with severe language problems.

Picture Arrangement—place pictures in a sequence to produce a logically correct story.

Block Design—manipulate blocks in order to reproduce a visually presented design.

Object Assembly—put together a puzzle to form complete objects.

Coding—associate one set of visual symbols with another.

Mazes—trace a path through progressively more difficult mazes.

Geometric Design—copy geometric design.

Other tests have been developed for populations who may experience difficulty in responding to a verbal test; for example, the Arthur Adaptation of the Leiter International Performance Scale (AALIPS) and the Nebraska Test of Learning Aptitude (NTLA) are appropriate for hearing impaired children. Unfortunately, the AALIPS is inadequately standardized, especially on the population it is intended to serve. The NTLA provides norms for deaf children, for whom the instructions are pantomimed, and norms for normally hearing children, who are given verbal directions, but those norms do not apply to hard of hearing children who are given either oral or pantomimed instructions. A comprehensive analysis of appropriate psychological tests with necessary adaptations for hearing impaired students can be found in Boyle (1977).

DIFFERENTIAL DIAGNOSIS

Assessment is particularly difficult when some impairment other than the known hearing loss is suspected. We are too quick to blame a learning disability for the aftermath of poor or ineffective teaching. Many diagnoses of "learning disability" are made on the basis of "gut" feelings rather than specific test information. The case manager, in synthesizing evaluation results, should be aware of hard of hearing children's typical performance patterns on tests so that deviant patterns will be recognized and further assessment will be made of a child's learning abilities.

The Child with No Additional Disorders

The following general profile is typical of a hearing impaired child who exhibits no additional learning disorders:

Academic Testing

Typically, the hard of hearing child performs well on those subtests that require such analytic skills as capitalization, punctuation, math computation, spelling, dictionary skills, and map reading. More difficulty is found on subtests that have a strong language base, such as reading comprehension, language usage, vocabulary (reading), and math word problems.

Psychological Testing

Typically, the hard of hearing child scores within normal limits on all the performance subtests of the WISC or other performance tests, as long as he has normal intellectual potential.

Speech and Language Testing

Because a hearing loss is known to affect language competency, decreased scores may be expected on all tests that measure comprehension and expression of spoken language.

Learning Strategies

If the material is presented at a language level commensurate with the hearing impaired child's ability, and if the material is presented a number of times to insure that learning has taken place, then the hard of hearing child should retain the material. The learning rate for analytic material, such as the alphabet or computational math, is typical of the normal hearing population.

The Child with Additional Disorders

The following profile typifies the test performance of the hard of hearing child who may have additional learning problems, and should act as an indicator that further indepth testing needs to be done.

Academic Testing

The "multiply involved" hard of hearing child will show deficiencies in handling the analytic tasks that the normal hearing impaired child finds within his grasp. (N.B. It is important to find out if the child has been taught the material in the classroom; if not, then the deficit may be due to lack of exposure to the material.)

Psychological Testing

The "multiply involved" hard of hearing child may show a spiked profile (see Figure 7) on the performance section of the WISC.

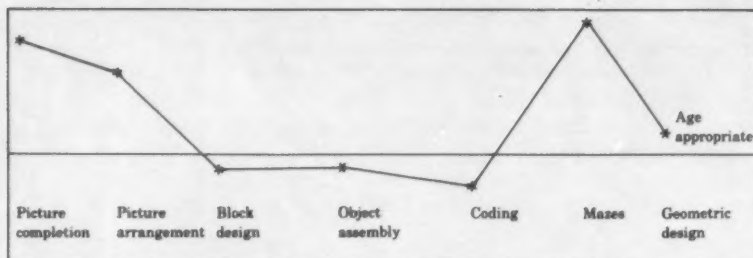


FIGURE 7. Example of Spiked Profile Obtained on Performance Subtests of the WISC which Indicates the Need for Further Indepth Testing.

Speech and Language Testing

A decreased score is expected on all the tests that measure comprehension and expression of spoken language.

Learning Strategies

The "multiply involved" hard of hearing child may have difficulty retaining the simplest material, even when it has just been presented or has been presented many times over a short time. Rote learning, such as the alphabet or phone numbers, may be difficult.

CONCLUSIONS

The success of a hard of hearing child in a particular setting depends on the interaction of his residual auditory ability, expressive and receptive language skills, academic performance, and psychosocial status. Regular assessment of these parameters is necessary to plan and implement an appropriate program and to evaluate already existing programs. No single measure is sufficient for such a programing decision. The ultimate criteria, however, are provided by the child himself: Is he learning? Is he happy? Is he growing up to be a productive human being?

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Psychosocial Considerations and Evaluation

JULIA DAVIS

Of all the effects that hearing impairment may have on the lives of persons, the least understood are the effects on social, personality, and emotional development (Donoghue, 1968). Most of the available information on the psychosocial status of hearing impaired persons centers on either of two major topics: (a) definition of a "typical" personality pattern or (b) description of their social and emotional adjustment to peers, family, or society's demands. The literature contains conflicting observations and conclusions which often are based on opinion rather than fact. Much of the reported data is invalid because of the measures used and the procedures employed in their collection. The inconsistencies of reported research (Altshuler, 1962; Levine, 1956; Solomon, 1943; Stewart, 1971) and the inadequacies of the tools by which psychosocial data are collected have discouraged professionals who work with hearing impaired persons from devoting the necessary attention to this important subject.

PERSONALITY CHARACTERISTICS

Attempts to draw conclusions from the studies of the personality development of hearing impaired children lead to confusion. Almost all such studies report on deaf children, although the hearing status is usually not well defined. The views of the psychosocial status of these deaf children are widely divergent; three categories of viewpoints can be identified: (a) deaf persons are uniquely different from other persons in personality, (b) the personalities of the deaf are no different from those of normal hearers, and (c) certain personality differences occur in deaf persons as a result of their attempts to adjust to society's communication demands.

The authors who adhere to the first viewpoint describe the hearing impaired as introverted, hostile, despondent, hopeless, suspicious, insensitive, selfish, unable to defer pleasure, impulsive, and fearful. Simply reading the list is depressing and may arouse wonder that hearing impaired people are able to cope with the world at all. With few exceptions, the data from which these conclusions are drawn were collected by administering paper and pencil personality tests or projective personality measures to deaf persons. A typical research study is conducted by an investigator unfamiliar with deafness, who administers a test to severely or profoundly hearing impaired persons, and then interprets test results according to "norms" established on hearing subjects. In many cases, there is no evidence that the deaf subjects understood the task. For example, investigators administered the Rorschach test to "nonverbal deaf children" and interpreted the responses or lack of them as evidence of severe personality disorder. Worse yet, the conclusions are presented with a straight face and no indication that the task might not have been comprehended by the children studied.

A second characteristic of personality studies is the widespread use of paper and pencil personality tests, such as the Minnesota Multiphasic Personality Inventory or the California Test of Personality. Such tests require subjects to read and comprehend complex sentences, choose between pairs of sentences as a description of preferred behavior, or judge activities or opinions expressed in sentence form as representative or nonrepresentative of their own behaviors. Since the average reading level of deaf persons is somewhere between the third and fifth grade, it is doubtful that many deaf subjects were able to fully comprehend either the extensive lists of sentences contained in such personality tests or the instructions for the task.

One curious fact emerges when studies of children and youth are compared with studies of adults, based on similar test measures. Children almost invariably show severe personality disorders while adults, with minor exceptions, appear to be well adjusted. One cannot help but wonder what miracle occurs between childhood and adulthood to erase all evidence of personality deviance! The simplest explanation, probably, lies in the subjects' different levels of comprehension of the tasks.

Investigators (Rainer & Altshuler, 1970) who support the second viewpoint tend to do so on the basis of studies of mental patients and observations of hearing impaired persons in a variety of settings. The studies of mental patients revealed that the proportion of deaf persons who are psychotic and neurotic is similar to the proportion of the total population with the same mental problems. Adherents to this viewpoint also point out the diversity of personality patterns within the hearing impaired population and the impossibility of establishing a "mean" of emotional adjustment under such circumstances. There is more overlap of personality structure than differences when deaf and normally hearing groups are compared. Observations of this sort have led some investigators to conclude that there is probably no typical personality pattern associated with hearing loss. Similarities among hearing impaired persons may exist, but they have not been ade-

quately identified to date because of the limitations of the available assessment tools.

Proponents of the third viewpoint (Reivich & Rothrock, 1972) recognize the special adjustment problems stemming from the inability to communicate easily in a highly verbal society, particularly as the problems relate to the measures used to determine personality traits. Although failure to identify with some personality test statements (e.g., "I am the life of the party" or "I can talk to strangers easily") may result in an abnormally high score on an introversion or withdrawal scale, it appears to be a reasonable adjustment to the inability to hear and understand conversation easily. When personality test results are interpreted with some knowledge of the communication problems experienced by hearing impaired persons, investigators are less likely to attach significance to certain response patterns. In one sense, the deaf person who does not describe himself as a gregarious "life of the party" is probably better adjusted than the one who ignores the constraints that hearing loss places on interactions with hearing persons.

Fewer studies have been conducted with subjects who have less severe hearing impairments. Comparisons of "hard of hearing" with "deaf" persons have resulted in conflicting data. In some cases the hard of hearing group appears to be "better adjusted"; in other studies, the opposite is found. Similarly, studies comparing congenitally with adventitiously hearing impaired subjects have resulted in equally inconsistent findings. Unfortunately, investigators do not describe their subject populations well; although subjects in the studies are referred to as "deaf," many of them actually have hearing impairments that would be classified as moderate by today's standards. Thus, it is difficult to extrapolate the reported findings to any specific population.

A review of the literature on personality structure and hearing impairment leads to the following conclusions.

1. The personality tests employed by most investigators are invalid for use with a population whose primary deficit lies in the inability to communicate effectively with ease.
2. Probably no typical personality pattern can be associated with hearing impairment, but further careful research is necessary before a definite conclusion can be drawn.
3. More study is needed of less severely hearing impaired persons by investigators who are thoroughly familiar with hearing impairment.

SOCIAL DEVELOPMENT

Of greater concern than personality structure to educators and clinicians who work with hearing impaired children are their social development and skills. Fewer studies have been conducted in this area, but that fact has

not deterred the publication of many opinions on the subject. Some proponents of mainstreaming (Nix, 1976; Northcott, 1973) for hearing impaired children provide testimonial evidence of the children's adjustment and popularity among hearing classmates. Peers are described as concerned, interested, helpful, and friendly. Teacher estimates of social adjustment tend to be more negative, however, and suggest that a large percentage of school children with hearing impairments are socially "maladjusted."

The nature of social problems is such that they do not lend themselves easily to investigation. How does one measure feelings of isolation, being left out, or insecurity in social situations? What numerical measure can be made of a child's acceptance by others, the degree to which he is included in peer activities, and the quality of friendly interaction with other children? To some extent, gross measures of these factors can be obtained from tests of self esteem or from sociograms and other sociometric measures taken within classrooms. For the most part, however, the quality of social interactions among children cannot be measured objectively, and the best estimate comes from careful observation and retrospective testimony from the children involved.

Observers in regular school systems frequently report that hard of hearing children are either more physically aggressive or more withdrawn than their hearing peers. Aggressive children, who are at least noticed by the teacher and their peers, may be referred to school psychologists and are usually well known by principals and others outside the classroom. The aggressive behavior may represent a healthy attempt to deal with the inability to communicate easily. This is especially true for the young child who cannot say, "It's my turn to swing now; you've had three turns, and it's not fair." One response may be to pull the other child from the swing and dump him unceremoniously on the ground. Children who exhibit such behavior as they grow older are often judged to be socially maladjusted and are sometimes labeled "emotionally disturbed." This represents an overreaction to behavior that is less mature than normal. Nevertheless, resorting to rough physical treatment of peers does represent immature behavior and contributes to poorer overall social acceptance.

Children who simply withdraw from social interactions may represent a more difficult problem. To begin with, they are often ignored by teachers and classmates to an unhealthy degree. Because they do not cause disturbances, their lack of social skills is less obvious and the pattern of withdrawal is not challenged or modified. Being ignored by the peer group has a devastating effect on a child's self esteem and can result in poorer adjustment than being noticed, even if it is in a negative way.

Planning for handicapped children within regular school systems must include some consideration of their social maturity and acceptance by peers. Given the unavailability of adequate assessment tools, it is important for teachers, clinicians, and other school personnel to understand the factors that contribute to personality and social development and to base systematic observations on knowledge of normal interactions among children and youths.

Family Influences

The development of an individual's ability to interact with others is rooted in the view of self and the esteem in which the self is held. Many factors contribute to self concept, but a major factor in how we see ourselves is how we are seen by significant others in our lives. In Erikson's model of critical phases of psychosocial development, the first three stages occur before age 6 when the child is seen as struggling to develop a sense of trust in the environment, some autonomy, and a sense of purposefulness.

It is difficult to imagine the extent to which parental and family factors influence a child's feelings of worth or independence. Parents must view their children as capable individuals if the children are to view themselves the same way. Unfortunately, the diagnosis of hearing impairment is often frightening to parents. Most parents have never known a congenitally hearing impaired person and may develop fears and concerns that influence interaction with the child. Parents frequently have difficulty disciplining hearing impaired children because they feel insecure about their ability to explain why discipline is necessary (as if most children could not associate their behavior with its consequences!). Parents require support from professionals who are knowledgeable about and accepting of the fear, guilt, anxiety, and anger that most parents feel when they are confronted with raising a handicapped child.

The fortunate parents are those who seek and receive adequate assistance in working through their emotional reactions to the child's impairment. These parents, in turn, are able to support the child in their view of him as an individual who can learn to function independently in the world and who is expected to participate fully in family and community life. Children who grow up in such an atmosphere develop confidence in their ability to make decisions, participate in activities, develop skills with effort, and contribute to communal projects. Confidence in such interactive skills then becomes the basis for moving beyond the family circle to interact with peers, teachers, and other persons external to the family.

Unfortunately, the ideal situation does not exist in many families. Parents may not be able to develop emotional support for their hearing impaired children or know how to express support. Unresolved emotions cause many parents to become overprotective or less demanding, critical, and generally nonsupportive or uninvolved in the child's life. Children who live in an anxious atmosphere are likely to develop their own anxieties about functioning in the family and in the larger community, thus limiting their attempts at and successes in socialization.

Communication Factors

More effort is required by communicators when one or both are hearing impaired. Statements must often be repeated, misunderstandings occur, messages are lost, and group activities either must be "interpreted" or the hearing impaired person's needs are ignored. The list could go on and on.

When children are very young, social interactions are physical and often are parallel rather than interactive. Young hearing impaired children can often function well socially with their hearing peers under most circumstances. As children grow older and enter imaginative, verbal play (e.g., playing cowboys and Indians, house, and store), rules must be established and roles based on prior experiences assigned. The communicative task is greater and socialization becomes more difficult.

Older children and teenagers engage in social behavior that revolves around discussions of themselves and others (often over the telephone for long periods), the sharing of musical or TV tastes, extracurricular school activities, and the opposite sex. It is important that everyone use the same communicative code, including slang and "in" jokes. Obviously, the hearing impaired child is at a disadvantage in such a communicative environment unless possessed of exceptional verbal skills and auditory perception.

Establishing and maintaining friendships depend to a large extent on the patience of the hearing child and the verbal skills of the hearing impaired child. When both communicators are hearing impaired, the empathy created by sharing an impairment often overshadows any personality differences that, ordinarily, would preclude close friendship. Communication difficulties may also be overlooked under this circumstance.

Peer Factors

One of the most dreaded circumstances of youth is that of being different from peers. The nature of the difference is almost irrelevant, and since all humans are different, most children perceive themselves as aberrant at one time or another. Some differences are more or less easily masked, such as large ears, limp hair, or freckles; others, such as obvious physical defects are not. Hearing impairment is an invisible characteristic, a factor that is both an advantage and a disadvantage. Since it cannot be seen, it can be successfully hidden unless its effects on the individual's functioning are obvious. This occurs when speech is affected, when large amplification units must be employed, or when hearing is so poor that it cannot be used effectively as a means of understanding speech. The invisibility of hearing loss is a great disadvantage when it allows the child to function *almost* normally and to remain unidentified as being hearing impaired. The *almost* is very important; this type of child often is considered "stuck up" or unfriendly because he does not respond to a distant greeting, "dumb" because of poor academic achievement, or "strange" because of misunderstood questions or inappropriate remarks.

The most popular hearing impaired children are those who develop special skills that give them status with their peers. Athletic ability, dancing skills, and artistic talent are common entrees into group acceptance. So is physical beauty, as much as this feminist hates to admit it.

Because "differentness" is so unacceptable to young peers, hearing impaired children who live in areas in which there are no other or very few

similarly impaired children report a strong desire to know "other people like me." They establish long lasting friendships with children they meet at special camps or remedial programs. Many plead with their parents to send them away to school where they will be surrounded by other hearing impaired children. Those children who prefer remaining in a local program report feelings of loneliness and rejection, especially as they grow older. Friendships are often limited to one or two "best friends" on whom they depend for social acceptance and outlet. They are rarely elected to class offices, as homecoming queens, or as cheerleaders. There are exceptions, of course, just as there are countless normally hearing children who do not achieve positions of leadership or prestige.

Adolescence, a difficult time for most young people, is further complicated by any deficit, real or perceived. In the case of hearing impaired children, the normal feelings of inadequacy and insecurity are exacerbated by the very real concomitants to the hearing loss. Reduced communication skills that, in extreme cases, may preclude easy conversation are the most obvious deficit and the most serious threat to socialization. Impaired academic achievement may lead to a poor self concept and to rejection as a "dummy." Young women often report being teased about their body aids, which other children refer to as "third breasts." Speech problems may be imitated. As innocent a blunder as speaking behind his back is often perceived by a hearing impaired adolescent as a cruel, insensitive act. Dating may become a nightmare when partners are teased for going out with the hearing impaired person. The absence of dates is interpreted as rejection, probably because of the hearing loss. The fear of being left out may cause the young person to become too eager for acceptance, to try too hard and, thereby, to alienate peers further.

Obviously, some social problems (e.g., dating) are common to many young people. For hearing impaired youngsters, however, they represent the norm rather than the exception. Hearing impairment, except in rare cases, affects the ease with which communication occurs, and communication forms the basis for social interaction. The hearing impaired person's self concept and confidence influence how rejection and insensitive treatment by others are perceived and handled. It is a rare hearing impaired child who does not perceive his social relations as inadequate and who does not long for full acceptance by peers. If being different is the worst thing that can happen, then the next worse thing is associating with someone who is different. One cannot always control the former, but one can control the latter. It is from this fact that the social problems encountered by hearing impaired adolescents often stem.

GUIDELINES FOR OBSERVATION OF SOCIAL SKILLS

Observation, rather than administration of a test, represents a behavioral approach to assessment of the social skills of children and youth. The advantage of a behavioral approach lies in its use of the child's natural environment as the setting for behavior. The disadvantage is the lack of norms

or validation data against which to measure a given child's behavior. Considering the wide variations that characterize normal behavior and the effects of antecedent and consequent conditions on given bits of behavior, the use of norms seems less important than the accurate description of situation related behavior.

Teachers, parents, clinicians, and psychologists can all serve as observers as long as they make use of natural settings. Steps in behavior data collection are as follows:

1. Opportunities should be planned in which the observer can watch the child in question on several occasions.
2. Activity considered to be problem behavior should be written down and described in detail. The terms used by the observer should be clearly defined. For example, a child should not be described as "withdrawing"; instead, the behavior eliciting that label should be described in detail (e.g., "Susan suddenly turned and walked to the far corner of the room, where she sat with her back to the other children, staring at the floor. She remained there until class was dismissed"). Observers should refrain especially from the use of such terms as uncooperative, hyperactive, impulsive, domineering, violent, cruel, and so on without complete descriptions of the behavior observed.
3. Conditions or events preceding the problem behavior should be described (e.g., "Immediately before Susan walked away from the group, Tom held her painting up and said, laughing, 'This is the funniest looking car I've ever seen'").
4. Reinforcement contingencies affecting the behavior should be noted. The behavior of other persons in the situation that feeds into, modifies, or eliminates the problem behavior should be delineated. A list of precipitative factors can be generated for a given child as well as a list of reinforcers that appear to be effective in modifying behavior.
5. The child's attempts to control his behavior should be noted and described accurately.
6. General observations of the child's social relationships should be made. Inclusion in group activities, acceptance on teams or by individuals as a work or play partner, degree of social interaction during daily activities, instances of preferences for younger or older playmates, and other evidence of social interaction should be noted over a period of time.
7. Behavioral observations should be compared to those of other professionals or parents. Isolated problem behaviors should not be heavily weighted in assessing a child's behavior. Avoid attaching labels (emotionally disturbed, social isolate, or the like); these terms should be left to psychologists who, in turn, should use them sparingly.

IMPLICATIONS FOR PLACEMENT

Because the measures of social or emotional adjustment are imprecise, it is difficult to suggest guidelines for their use in placement decisions. Chil-

dren need to be comfortable with their peers and confident in their ability to achieve in the school setting. Unfortunately, these attributes are seldom under the control of a child or school personnel. The factors discussed in preceding sections of this chapter influence a child's adjustment in the school situation. For hard of hearing children, placement options in the local educational system are usually limited. Resource rooms and itinerant teachers are available in only a small proportion of local school systems. Placement in a regular classroom necessarily requires a compromise between the individual child's academic and social needs. Even though academic skills may be seriously delayed, placement of a hard of hearing child in a class of children three or four years younger is likely to result in social problems and further reduction in self esteem. Existing data suggest that integration of hard of hearing children into regular classrooms often results in improved academic achievement but reduced social adjustment and self esteem.

Severely hearing impaired children present even more difficult placement problems from the social point of view. Their educational needs often require placement in self contained classrooms, at least part of the time. There are advantages and disadvantages to such placement. Children with similar communication and educational problems can work together in an atmosphere of less pressure and fewer feelings of inferiority. Less teasing about hearing aids or auditory trainers takes place. Contact with a larger group of children is not probable, however. Friendships are limited in number and the hearing impaired children may miss much of the social life of the school.

The team of parents and professionals writing the IEP for the hard of hearing child in a segregated classroom can include a socialization goal and supporting specific objectives which address this problem area. The selection of buddies, notetakers, and recreation activities for the hard of hearing child can be facilitative to these social needs. Extracurricular school activities as well as community and church groups can be accessed by the hard of hearing child.

On occasion, professionals are asked to advise parents on the feasibility of residential school placement for severely hearing impaired children, especially as they grow older. School officials have often ignored social considerations when faced with requests for advice from parents. If estimates of a child's social and emotional status have not been attempted, professionals should refrain from giving advice about placement changes until such information is collected and studied. Only through careful and systematic attempts to analyze the behavior and social aspects of hearing impaired children's lives will we begin to amass useful information about this important component of their development.

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The Parents as Consumers

DONALD R. MELTZER

The Spring before Kim, our 11 year old daughter, was ready for junior high, my wife and I met with the administrators of our local school system and of the regional special program for hearing impaired children. Kim, you see, is profoundly deaf, and both she and our son were enrolled in the special program. The purpose of the meeting was to discuss Kim's transfer to the regular education junior high school in our town. The next day, the district's special education director called the appointed coordinator of Kim's educational program. "One thing we forgot to discuss," he reminded the coordinator, "is the mechanics for monitoring Kim's progress against the goals we are going to set in her education plan."

That phone call removed my last remaining doubt about whether, for the first time, Kim should enter our local school system full time, rather than continue to attend the special program for hearing impaired children out of town. As a corporate financial officer by trade, I recognized the importance of setting goals, of establishing procedures to measure and monitor progress toward those goals, and of being prepared to adjust original plans when results signaled a need to change. This process is as applicable to an educational plan for a hearing impaired child as it is to a corporation's marketing strategy. The special education director's concern over monitoring responsibility indicated to me not only that Kim would not be slotted and forgotten but, more important, that the decision we made was not ultimate and final. If the program did not work out, early indications would be detected and adjustments would be made in the support services or, if necessary, in Kim's placement.

The assurance that a child will not be placed and then forgotten by special education administrators after the IEP is prepared is one of a growing list

of parental concerns. In recent years, parents' levels of sophistication about their rights under state and federal special education legislation have been raised significantly. Local and statewide parent groups and special needs councils, parent centered preschool programs, increased media attention to special education services, and the establishment of public agencies to provide advocacy services, literature, and counseling have all contributed to increased parental awareness.

In our state, for example, the parents' association has distributed more than 10,000 copies of a resource guide for parents of hearing impaired children (Massachusetts Parents' Association, n.d.). The guide includes chapters on parents' rights; early identification; evaluation centers; educational facilities; courses available for parents; camping and social programs; national, state, and local information sources; and a reading list. In addition, the parents of hearing impaired children can call upon members of the association who have been trained to serve as advocates at IEP meetings or they can obtain similar services from other private agencies or the state Office for Children.

Thus, although parents now may experience no less agony and insecurity over decisions regarding a hearing impaired child's placement than in the past, their concerns are becoming more specific, are better articulated, and may require more attention by professionals than ever before.

Our experience has been that educators welcome rather than resent the better informed parent (Griffin, 1978). Nevertheless, we know of cases in which either financial considerations or merely unfamiliarity with the consequences of hearing impairment led to recommendations for inappropriate placements or inadequate support services that would have significantly deterred the educational development of children. In such cases, the due process provisions of Public Law 94-142 are definitely on the side of the parents. However, these safeguards often are counterbalanced by the ability of public officials, either with conscious intent or through inexperience with administering the new regulations, to cause intolerable administrative delays.

Luckily, in our state, these situations have been limited to a few specific cities. However, increasing concerns over spending for education in general and special education in particular, do not bode well for the future. Nothing is more frustrating to a parent than to see precious time wasted in the child's critical years for language development while the bureaucratic process grinds on at a snail's pace. When this happens, parents must persevere, study their rights under the legislation in detail, and seek as much professional support as their time and energies will permit. Most parents, however, are concerned with the substantive provisions of the child's IEP rather than the fairness of the process itself.

Many parental concerns center on the receptiveness and prior experience of those educators with whom the child will have the most contact. For example, the initial question of the parent of a child about to be mainstreamed usually is, "Has the teacher ever taught a hearing impaired child

before?" or "Has the teacher ever dealt with a loss like my child's?" These questions are followed by inquiries about the extent of the teacher's inservice training to prepare for this particular teaching experience. Parents, in most cases, are concerned with whether the teacher will truly understand the nature of the hearing impaired child's language deficiency. They want to know whether the teacher will tend to overprotect the child or whether a passive child will lull the teacher into thinking that he is comprehending the lesson, when he is not. Most important to parents is whether a hearing impaired child in the classroom will be an intimidating experience for the teacher simply because he doesn't know how to deal with hearing loss.

At the meeting with the administrators, my wife and I were pleased to hear the principal of the junior high school which Kim would attend suggest that the teachers she would have in the Fall observe her in her special program placement so that they could gain an understanding of her capabilities.

Receptivity goes beyond the classroom, however. Parents are concerned about the reactions of the entire school staff, from physical education instructors to cafeteria aides. They want to know how *these* people will be prepared to deal with the hearing impaired child. In Massachusetts, for example, parent groups have even funded videotape presentations of professionals explaining deafness to prepare entire school staffs for a mainstreamed deaf student.

Parents believe that the success or failure of their child's education may well hinge on the child's happiness with the placement. The happiness, in turn, often depends largely on the receptiveness of the child's peers. Parents, therefore, want to know what, if anything, will be done to prepare normally hearing children for the experience of having a hard of hearing or deaf classmate. Parents fear, very often, that a classroom teacher will not know how to cope with a hearing impaired child and that this reaction will be perceived by the students and, consequently, will lead to peer rejection of the mainstreamed child. Such rejection defeats many of the major purposes of least restrictive placements.

For this same reason, many parents are justifiably more concerned with the nonacademic aspects of their child's placement than with curriculum and learning goals. In addition, they want to be assured that the teacher of the least restrictive placement will initiate some discussion of the consequences of hearing loss. A full year of isolation for the deaf or hard of hearing child can be prevented by a few minutes of thoughtful explanation near the start of the school year, although care must be taken not to overemphasize the hearing impaired child's special needs because it can be counterproductive to promoting acceptance.

Several years ago, for example, we found that the relocation of our children's special program from a physically isolated administration building into a section of a regular elementary school had significant effects on their subsequent development. It provided easy access to a myriad of partial integration situations, some of which eventually proved to be more suc-

cessful than others but all of which made some contribution to their overall growth. We believe that it is this carefully monitored mainstreaming progression that ultimately resulted in our daughter's attempt at full mainstreaming at the junior high level. Looking back, we would have to agree that the social interactions often were as important as the academic opportunities. There is no doubt that peer acceptance of our 8 year old son was reinforced by the opportunity to show his athletic ability as a member of the school's youth soccer league team. In turn, the opportunity gave his self confidence a big boost, which is an important factor in both the academic and social development of the hearing impaired child who, if nothing else, requires more than average tenacity and persistence.

The key element in peer acceptance, however, remains the classroom teacher. We realized this when our son was mainstreamed with tutorial support in a large first grade class. For example, one day the teacher interrupted the lesson so that Chris could explain his hearing aid to the entire class when his replacement of a battery evoked some curiosity from classmates. Sensitivity in such a situation is what parents are looking for when they ask to observe possible teachers for their hearing impaired children.

Parents' concerns with support services (interpreting, amplification apparatus, audiological support, supplemental language and speech therapy, and academic tutoring) often go beyond the quality of such services to reflect the same apprehensions about teacher and peer understanding. It is helpful when the reasons for these services are fully explained to all staff members and, when applicable, to classmates as well. Although parents recognize that Herculean scheduling may be required, they want assurance that an effort will be made to keep therapy and tutoring support from impinging on the time other students are engaged in nonacademic activities.

Parents are also becoming more aware that a hearing impaired child's personality may need as much support as is given to his speech or hearing; therefore, they are becoming concerned with whether adequate counseling is available for their hearing impaired child. Although, in most cases, the parents may be reluctant to admit it, they appreciate professional counseling services which are also available to them and to the hearing siblings of their deaf or hard of hearing children.

Parents want to receive informative feedback on their child's progress. Even when they are satisfied that adequate monitoring of their child's IEP is taking place, they often feel that they are not informed of the results. They want to know about their child's successes as well as problems. Particularly with adolescents, it is difficult enough to find out from a hearing student what is going on in school but it is all the more frustrating to try to get an accurate progress report from a hearing impaired child. Therefore, parents like to see a formal routine established for reporting home. One of the best features of our daughter's program during her first year at the junior high was the regular Friday morning phone calls to my wife from the person responsible for Kim's program. Such calls need not be lengthy or comprehensive each week to serve as a procedure for adequate reporting.

They need to be scheduled on a regular basis to establish the routine and the necessary rapport between parent and professional, especially during the initial stages of the IEP.

Finally, transportation is a parental concern. Unfortunately, it often receives a disproportionate amount of attention from parents whose children are not attending neighborhood schools. Hearing impaired students usually are widely scattered over an area because hearing loss is a low incidence handicap, and few, if any, administrators have figured out a way to provide cost effective, reliable transportation that does not interfere with the children's participation in after school activities. Such electives, of course, are often crucial to a hearing impaired child's social interactions, self confidence, and happiness. Every effort should be made to allow hard of hearing and deaf children to participate in after school art, athletic, avocation, and amusement activities, even if the burden of transportation must fall, as it usually does, on the parents themselves.

These are the major needs and concerns for the education of hearing impaired children and youth, as one parent sees them. The degree to which professionals show sensitivity to them is the determining factor in the happiness of hearing impaired children and, therefore, in the success of their education.

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Teachers as Consumers— What They Should Know About the Hearing Impaired Child

MARILYN L. TEITELBAUM

Educational theories, philosophies, and methodologies come and go. Over the years teachers have been bombarded with new math, teaching the "whole" child, team teaching, core curriculum, open classroom and nongraded curricula, and, most recently, a return to teaching basics. It should be understandable, therefore, why classroom teachers express a certain degree of cynicism whenever another panacea is propounded. However, the concept of mainstreaming deserves careful consideration by the classroom teacher because it holds the promise of being beneficial not only to the handicapped child but, also, to the rest of the class as well (Jordan, 1976; Reynolds & Birch, 1977).

Mainstreaming, as such, is not unique to those of us who have been teaching for some time. We have always had in our classrooms at one time or another, a child with some disability—emotional or physical—ranging from epilepsy to cerebral palsy, visual impairment to stuttering, and hyperactivity to more serious emotional and antisocial behavior. Such children have always been few and far between and rarely have we had more than one such child in the classroom at a time. We learned to manage them as the need arose. With mainstreaming becoming the established pattern, however, the classroom teacher must take all necessary steps to prepare to respond most effectively so that all parties—the child, the teacher, and the other students in the class—will derive the maximum benefit. The need for preparation is especially urgent when a hard of hearing child is placed in the classroom (Bitter, 1976).

Before the hard of hearing student even enters the classroom, I, the teacher, would want to have answers to a myriad of questions. I would want

to know not only about the child's hearing loss but, also, about his prior educational experiences, psychosocial behavior, academic achievements and potential, and, most important, the resources that are available to me to help this child to adjust to the classroom situation and achieve to his maximum ability.

THE CHILD'S HEARING LOSS

My primary concern, obviously, will be the child's physical disability; the hearing loss must be defined and detailed. How extensive is the hearing loss? Is it in both ears? Which ear? How much actual hearing does he have? Is the cause of the hearing loss congenital? If not, how recently did it occur and what was its cause? Was the cause especially traumatic (e.g., car accident with attendant loss of life and/or long period of hospitalization)? Does the child lip read? Does he wear a hearing aid? If so, are batteries a consideration? In the case of the younger child, I would have to know how often the batteries need to be changed, whether they need to be refrigerated, and if the child is capable of ascertaining when new batteries are needed. Furthermore, I would also have to know if the child has any other physical disabilities that may affect his classroom behavior or performance.

EDUCATIONAL BACKGROUND AND EXPERIENCES

After obtaining sufficient answers to these questions, I would try to gather as much information as possible about the child's educational background and experiences—at school and at home.

The Parents' Attitudes

What are the parents' attitudes toward education in general and toward the school in particular? In the latter case, it is essential to know the educational level of both parents because, very often, this influences their attitudes toward school and their expectancies as well as their degree of involvement in their child's education. Generally speaking, the more extensive the parents' schooling, the more capable they are of understanding the educational philosophy and methodology that are used to help their child adapt and succeed in the regular classroom situation.

Another area of concern is the parents' past experiences with the school(s) that their child attended. If those experiences have been positive and supportive, the parents will also be supportive and, hence, make my job much easier. If, on the other hand, those experiences have been negative, I will have to make a more concerted effort to establish good rapport with the parents so that my work in the classroom will be reinforced in the home. Without parental support, success with the child is that much more difficult. One other question that needs to be answered concerns the parents' expectations. Are their expectations for their child's academic achievement and social adaptation reasonable or unrealistic? Do they expect miraculous res-

olutions of all problems? And, most important, are they willing to work *with* the school?

The Child's Attitudes

Of equal importance to the parents' attitudes are the child's own attitudes and past experiences. To be sure, these will vary, depending upon the grade the child is in: the higher the grade, the more diverse his experiences. However, overall, the same basic questions apply: How does the child "feel" about school? Have his past experiences indicated that the teachers and school are there to help him? Who was his teacher last semester or year? Was he compassionate? Supportive? Did he maintain a disciplined classroom atmosphere or were the children permitted to move about freely with few restraints? Did he overprotect the child when or if he was taunted by classmates? The answers to these questions help me, in part, to formulate a better understanding of the child's attitude. Also, I would certainly want to confer with the previous teacher for his perception of the child so that I can take that into account in my initial contacts with the child.

PSYCHOSOCIAL BEHAVIOR

To further prepare myself for working with this child, I would have to know something about his psychosocial behavior. Obviously, no child, and especially no child with a disability, comes into the classroom devoid of the myriad experiences that affect interactive behavior and attitude toward learning.

Peer Relationships

Of primary concern to me are the child's relationships with his peers, for it is those relationships that most directly affect the daily classroom climate. If they are negative, the classroom situation can become severely strained, concomitantly reducing the amount of learning taking place. Those relationships also determine the other students' acceptance of the child's handicap. Peer relationships, of course, are not limited to the classroom but extend outside the room as well. Does the child have any friends in his own neighborhood? Does he enjoy playing with other children during outside activity periods? Is he aggressive? Assertive? Inhibited? Shy? Hostile? Does he participate in individual or team sports? Does he belong to any school or community groups (e.g., scouts, church groups, choir, drama group)?

Adult Relationships

As important as his peer relationships may be, his relationships with adults also are very important. Of greatest significance here, perhaps, is the relationship with his parents. How does the child perceive his relationship with his parents? Are both parents supportive? Are they overprotective? Is

there any conflict between the parents about the child, and does he sense such conflict? Are the parents interested in the child's academic achievement and social progress? In part, the relationship with his parents will have an effect, positively or adversely, on his relationships with other adults. My knowledge of the child's relationships will help me to plan how to relate to the child in the classroom situation.

ACADEMIC ACHIEVEMENTS AND POTENTIAL

When I have all the information relevant to the degree of the child's hearing loss, prior educational experiences, and psychosocial behavior, I would focus my attention on his academic achievements and potential. One area of basic concern is reading ability. In order to plan an effective curriculum for the child, I would have to know his reading level as well as the various language arts related test scores. These would include standardized achievement test scores as well as teacher assessment of the student's achievement and potential. I would want to know how the child performs in word recognition, word attack skills, vocabulary, phonics, and comprehension. Does he know root words? Does he hear word endings? Is spelling a problem area and, if so, how much is related to his hearing loss? Can he read orally with some degree of expression and interpretation? Will he read orally in small groups? Before the entire class? The answers to these questions are especially critical in the primary curriculum because it involves reading, which is directly related to the child's success in school.

Speaking, which is related to the communication arts, can be especially critical for the child with a hearing loss, depending on when that loss occurred. Not only is it important to know the child's speech problems and the extent to which they hinder effective communication but, also, to what extent they are the result of the hearing loss. A related concern is the student's aural comprehension. If he wears a hearing aid, can he hear with minimal difficulty? Does he rely primarily on lip reading? Must one always face the child when speaking? Does he rely significantly upon visual aids for comprehension?

Many of the questions raised about the child's aural comprehension and reading capabilities are equally applicable to other areas of the curriculum. In mathematics, for instance, I would again want to know the child's standard test scores, grade level achievement, and prior teacher's assessments of his capabilities and potential. Furthermore, I would want to know his degree of skill in addition, subtraction, multiplication, and division and his accuracy in computation. I would want to know how well he understands concepts and, directly related to his reading skills, how well he can read and comprehend word problems and solve them mathematically. Also, I would need to know what types of manipulatives may best help him.

There are other questions I would raise: Does the child have difficulty with handwriting? How are his gross motor skills? Fine motor skills? Is his writing legible? Immature? What would the comfort level of records and

tapes be for this child or would they only be frustrating? Will movies and filmstrips be beneficial? What are the child's academic strengths? What are his hobbies or other interests which I can use effectively to motivate his learning?

RESOURCES AVAILABLE TO THE TEACHER

Most of my questions, thus far, can be raised validly about any child, of course. However, when it has been ascertained that some or all of the hearing impaired child's curriculum deficiencies are directly due to his hearing loss, it becomes increasingly important for the classroom teacher to know what resources are available and the extent to which these resources will play a supportive role (Nober, 1974; Paul, 1977). Here, I must be fully aware of what aid I will get from those specialists directly involved with the child's disability. Foremost will be the speech and hearing clinicians. Some of the questions I will want answered are, What kind of testing will the speech-language pathologist perform? How much time can he devote to the child and to me per week? How will the speech clinician help me to better educate this child? The same questions can be raised for the hearing clinician: Will he be available for tutorial help? What kinds of testing and evaluation can these resource people provide? Can they pinpoint problem areas in the curriculum? How readily available are they for consultations with me? Of great importance as well is the role to be played by the reading consultant; here again, the same questions apply.

Frequently, preteaching is a recommended strategy to support the hard of hearing child (see Chapter 9). As the regular classroom teacher I would require some specific information from the other school specialists regarding the preteaching sessions. Will there be adequate conference time for me to explain the unit I am going to present? What specifics do the specialists want from me about vocabulary, media, assignments? How will the preteaching sessions affect my assessment of the child's knowledge of the unit? Preteaching sessions may assist the child in acquiring new concepts and vocabulary and permit the child to receive the same instruction as the other students in the class. The organization and scheduling of my consultation with other specialists is important to assure that preteaching is effective for the child and teacher.

It is not only these specialists who should play a role in helping me to mainstream this youngster but, also, other members of the school staff. Is the music teacher aware of the youngster's disability? Is he making an overt effort to involve him in the musical activities of the school? Can the art teacher offer special help through the various materials and media? Can he help the child to become more involved with his peers? Can the artwork be used to express ideas and illustrate stories and other classroom work? Can the physical education teacher set up a good program to help the child with motor coordination? With sportsmanship? With verbal communication? With team effort? Can the librarian help in the selection of high

interest books? Will he help to stimulate the child's interest in reading? Will the child be made to feel free to visit the library and exchange books whenever possible? Is the librarian willing to work closely with me to help the child make good book selections? These are the professional staff members with whom I would want to discuss the child periodically, but other members of the staff can also play important roles on a daily basis: the cafeteria aides, custodians, office clerks and secretaries, and bus driver. It is the total, combined effort of all these people that will, in the final analysis, help me to mainstream this child for his benefit and the benefit of the other students.

CONCLUSION

I have listed some of the questions and problems that come to mind when I think of receiving a child with a hearing loss in my class. I am certain that many more questions can be raised, and many more will arise once the youngster is in the class. No doubt, each child is different and each brings with him unique qualities, but I strongly feel that mainstreaming can only be effective if the teacher is aware of a child's particular potential and problems and, most important, is assured of support from all colleagues who are directly and indirectly involved in the child's education. Under such conditions, I am confident that I can absorb hard of hearing youngsters into the mainstream of my class.

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Developing IEP's for Hard of Hearing Children

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As Public Law 94-142 is implemented, variations in planning and development of the individualized education program (IEP) process are apparent. Writing IEP's for children with low incidence handicapping conditions, such as hard of hearing children, has proven to be a difficult task (Report to Congress, January 1979). The purpose of this chapter is to specify the role and responsibilities of team members in developing IEP's for hard of hearing children. Although many local education agencies employ educational audiologists, hearing clinicians, or mainstream educators for the deaf, this chapter will assume the lack of availability of such experts, and will focus on the expanded role of the school based speech-language pathologist. The information presented is intended to increase the knowledge and skills of the school based speech-language pathologist so that the range and quality of total services to hard of hearing children are improved.

Several problem areas in developing effective IEP's for hard of hearing children will be explored relative to team membership, age of the child, and educational alternatives available to the team members. These problem areas have been identified in Massachusetts with similar legislation enacted prior to Public Law 94-142 (Blanchard & Nober, 1978).

COMPONENTS OF THE IEP FOR HARD OF HEARING CHILDREN

Many authors have described the components of the IEP for handicapped children (Torres 1977a; Weiner 1978). According to the regulations of the law, each IEP should:

1. Provide an overview of the child's learning style or constraints.

2. Detail the general and specific objectives for the child for the coming school year.
3. Document professional services that are necessary to achieve the stated objectives.
4. Address the measures and criteria to be used to determine alternative services or placement.

To fulfill these requirements, a team of professionals and parents prepares individualized assessments and, during a case conference, collectively completes the IEP. According to the regulations, team members include parents, the teacher or teachers, an administrator, and the handicapped child (where appropriate). The hard of hearing child will benefit from an expanded team that includes parents; regular education teacher; administrator; child (where appropriate); speech-language pathologist; audiologist, hearing clinician, or mainstream educator of the deaf; and school psychologist (Nober, 1978). Such a team provides diverse assessments and placement options for children receiving their education in regular school programs.

Historically, over 50% of the hearing impaired children in the United States were educated in regular classroom settings, with or without support services (Northcott, 1975). According to the latest available data from the Bureau of Education for the Handicapped (OSER), 90% of the hard of hearing children in the United States are enrolled in regular education settings and will continue to be (Report to Congress, August 1979). While these data indicate hard of hearing children as a group are placed in the least restrictive educational environment, the reports do not evaluate the quality or quantity of special education or related services available to the children.

The speech-language pathologist, serving on the team for hard of hearing children, can facilitate and generate appropriate educational support for the child and is best prepared professionally to serve as team leader or liaison for children with hearing handicaps.

THE IEP IMPLEMENTATION PROCESS

A mild hearing deficit alone does not automatically qualify a hard of hearing child for special services under Public Law 94-142. The hard of hearing child is recognized as handicapped only if it is determined that he or she requires special education and/or related services to remain in the regular education setting. Clearly, children with mild hearing problems who do not require amplification, speech therapy, or related curricular modifications, and who are able to receive all their education in regular classrooms without additional services, may not be considered within the counting limitations of special needs children.

The hard of hearing child who requires special education, speech therapy, amplification, and related audiologic services is counted as a special needs child and, thus, is entitled to the full spectrum of services and safeguards provided by the law (CEC, 1977).

Several preplanning sessions are often required to insure an effective team conference in which all participants make contributions and decide on the child's 1 year educational program. Since parents and all teachers have the right to attend these preplanning sessions, they should be informed of the scheduled dates.

Team meetings result in a composite of perspectives of each child's needs. During the meetings, a written program is produced that details services and goals for the coming school year. As the determination of special services is agreed to by team members, specific areas of intervention are delineated.

The mix of individual/group, professional/parent planning for hard of hearing children is the mechanism by which IEP's are devised and evaluated. Specific issues that are central to the hearing impaired child's IEP, such as purchase of amplification devices, diagnostic language arts programs, psychosocial intervention, and the like, should be addressed by both short and long term planning through the IEP process. Each aspect of identification, assessment, and placement of the hard of hearing child warrants consideration by team members (Torres, 1977a).

Identification

In this phase of the IEP process, also known as referral and screening, children are selected for relevant evaluation services. The identification procedures—hearing screening, speech/language screening, and academic (grade appropriate) performance—are described.

Hearing Screening

Hearing screening employs pure tones generated at 25 to 30 dB at several selected frequencies in each ear. The audiometric test may be performed by differently trained personnel depending on the regulations of the state or local education agency. In some states or school districts, pure tone hearing screening may be performed by the public health nurse, a technician, a speech-language pathologist, audiologist, consultant, or hearing clinician. The differences in training affect the identification phase of the IEP process, including followup referral for additional audiologic and otologic evaluations. If the personnel are inadequately trained, the testing conditions poor, or the child has a fluctuating middle ear problem, the screening procedures may not be adequate to identify a hard of hearing child. To insure such a child the full benefits of Public Law 94-142, primary consideration should be given to the technical skills and competencies of the tester.

Speech/Language Screening

In addition to hearing screening, many school systems screen the speech and language competence of children at selected grade levels. In these evaluations, speech-language pathologists assess samples of articulation proficiency and connected speech and language. Grade level screening is usually

programed for children in the preschool age group, kindergarten, third grade, and those who have been referred. Thus, the hard of hearing child who exhibits a minor articulatory problem and is not included in the grade level screening process may miss the routine referral for speech and language evaluation, which may result in costly management delay. Another significant identification avenue for the hard of hearing child is referral by the regular classroom teacher for assessment of academic deficiencies or socialization difficulties.

Academic Performance

This initial phase of the IEP process is critical to the hard of hearing child because it generates appropriate remediation services. If the child is not identified, the services are delayed until further referral is made. Delays in referral frequently occur because the child's academic or social behavior differs from expectancies based on previous reports. New teachers may not be sensitive to possible problems prior to receiving a child in class. It is not uncommon for the hard of hearing child to remain unidentified as a child with special needs until third grade. Then, the augmented cognitive demands of the curriculum widen the achievement gap between the child and his or her normally hearing peers.

It is important to stress that educational assessment can be requested by classroom teachers, parents, or the child. Expanded evaluation services require parental permission. These initial contacts with parents of hard of hearing children facilitate the progress of the entire IEP process (Nober, 1978).

Evaluation/Assessment

The extensive evaluation phase of the IEP process permits broad based assessment of the child's current learning style and social achievement, educational history, psychological profile, speech and language capabilities, medical history, and home environment. Analysis and integration of these assessments are the charge of the IEP team. Some assessments and services are mandatory. Because certain aspects are specifically pertinent to the hard of hearing child, they are covered in more detail here. (A complete review of the IEP evaluation process for children who are not hearing impaired is omitted.)

Educational Assessment

The classroom teacher is responsible for providing a review of the child's previous and current educational progress for use by the IEP team. The classroom teacher may observe the hard of hearing child's specific needs, such as learning style preference, preferential seating, flexibility and mobility, and grade level language arts skills. Other academic and social needs also should be addressed, such as:

1. Specific language arts skills based on Informal Reading Inventories (IRI) and reading level, word attack, spelling, listening, and written language skills.
2. Math skills that contrast abstract tasks with concrete tasks.
3. Other curriculum age appropriate areas and nonacademic areas, special subjects, and special talents/interests.
4. An index of standardized achievement test scores relative to grade level and local norms.
5. Interpersonal skills in peer and adult interactions and family support.
6. Relevant modifications of the curriculum which were made before referral for evaluation, and the methods and materials available to the school.

The educational assessment is central to the team's gaining a global understanding of the child's performance within the classroom. The teacher's ability to summarize the information for team members and link it to other evaluations is crucial.

For the hard of hearing child not receiving special educational services, the educational assessment becomes the mechanism for IEP teams to plan intervention strategies. Objectives that lead to measurable performance data enable the team to focus on individual needs. Clearly, a full understanding of the child's current achievements and skills is the basis for designing future achievement goals.

Psychological Assessment

This assessment provides the team members with an index of achievement expectancies, qualitative and quantitative data on verbal and performance tasks, and structured analytical observations of the child's social patterns. The psychometric battery should provide the team with meaningful profiles or patterns of performance as a basis for determining objectives. Information gleaned from standardized tests is linked with assessments by team members and becomes the factual base for the development of objectives for the child's program, which will be carried out by the classroom teacher or other direct service provider(s).

Developmental assessment, a process of structured observation of attained developmental milestones, leads directly to the design of objectives; it is the most efficacious assessment procedure for the educational management of elementary age hard of hearing children (Wood, 1975). The process has been documented and reported extensively in the literature; however, the application of diagnostic information to the design of objectives for the hard of hearing child is less well defined.

Speech, Language, and Hearing Assessment

The speech-language pathologist serves as a member of the evaluation team only upon request of the administrator, teacher(s), or parent(s). Each spe-

cialty area (speech, language, and hearing) uses different intervention strategies. The speech-language pathologist's role is to assess the total communicative process (i.e., the receptive and expressive components, including articulation, oral language, and connected discourse). The speech-language pathologist may have been most closely identified with assessment of the articulatory or phonological component of language in the past but, currently, most are trained to assess the morphological, syntactic, and semantic components of the communication model. (For the specifics of the speech and language evaluation of preschool children, see Chapter 3, and of school age children, see Chapter 4).

What could be more basic to the development of behavioral objectives in the IEP process than a complete speech and language assessment? Unfortunately, in the past, assessing the articulation competence of children was the predominant activity of many speech-language pathologists. In many instances it was a role predetermined by the job descriptions written by many local education agencies. The expanded evaluation of oral language (syntactic and semantic) competence is significant to the IEP process. Particularly on the elementary level, these assessments should be related directly to the educational management of language arts skill areas.

The regular class teacher, special education teacher, and the speech-language pathologist assess language arts skills in somewhat different ways. One guideline for determining direct services to hard of hearing children focuses on dividing academic curriculum objectives between those addressed by the regular class teacher and those addressed by the special education teacher. General language skill objectives are addressed by the speech-language pathologist working in consultation with the teacher(s).

Assessment of a child's receptive hearing sensitivity is a multiphasic process that requires the skills of different school personnel. The hard of hearing child requires an annual audiological assessment, at minimum. (The specifics of the audiological assessment and related concerns are given in Chapter 2.) Ongoing audiological assessment must be written into the IEP for each hard of hearing child; it may require close collaboration with an educational audiologist or audiologic center. The speech-language pathologist, in the role of team leader, should serve as the liaison with the audiologic service and as the interpreter of reports and monitor of recommendations.

It is important to review the avenues for the acquisition of amplification devices (both personal hearing aids and FM auditory training systems) as part of the IEP process. When prosthetic devices are aids to the improvement of educational achievement, they are included as related services within the regulations of Public Law 94-142 "as may be required to assist a handicapped child to benefit from special education..."

Typically, personal hearing aids, after an examination by a physician, are obtained through state rehabilitation services. Each state has its own regulatory mechanism for the purchase of personal aids; usually, it is based on the family's ability to pay. The IEP process assists parents in the ac-

quisition of binaural aids (when only monaural aids are provided through rehabilitation services) if recommendations for them are included in the IEP objectives. As a rule, personal aids for hard of hearing children are acquired through the cooperative efforts of state human service agencies and the local school system.

The purchase of FM units for use by individual hard of hearing children is the responsibility of the IEP team. In acquiring an FM unit for a particular child, the objectives should include the designation of a person in the school to assume responsibility for charging the unit and monitoring its output and use by teachers. An FM unit, if designated as necessary for educational management, can be purchased by the school system and remains its property. In order for a family to use an FM unit at home, specific justifying documentation and carefully delineated parent training programs are required.

Typically, the school system develops a cooperative relationship with the audiologic center and arranges trials of individual FM units. Refitting the amplification output of an FM unit to a child other than the one for whom the unit was purchased is necessary and should be a specific objective for the second child. It is important to include in the IEP objectives specific orientation sessions for the teacher(s) who will be using the FM unit for the first time. Rejection of the FM unit after such a significant investment by the school district can be avoided by effective orientation (inservice) programs for teachers (Nober, 1977).

Writing Objectives

Experience with the writing of general and specific objectives by IEP team members has revealed a consistent difficulty. The objectives must be determined directly from assessment information, but, frequently, team members, although able to identify the areas of required intervention, are unable to coherently translate this information into cogent behavioral or performance objectives. Adequate instructional objectives state clearly what individual children will be able to do, the conditions under which they will do it, and the criteria that will be used to judge their performance. If any element is absent from the written statement, the objective is not stated adequately for instructional purposes. An important factor in designing behavioral objectives for the written IEP is the inclusion of the child's current status on a given task for comparison with the status level after intervention. If pre-intervention statements are not included, comparative measures of achievement cannot be made.

Examples of an appropriate form for performance or behavioral objectives have been devised for workshops and courses but no consistent notation is now being used by IEP teams. Some use a percentage time rating of objective achievement (e.g., Johnny will be able to count in units of 5 to 100 with 80% accuracy). Any criterion may be helpful; however, criteria may interfere with educational practice if they are not sequenced to meet stated long

term goals. In addition to percentage ratings, grade level attainments are frequently stated as general objectives (e.g., Johnny will be able to read on grade level by the end of the school year). Grade level measures that fail to indicate assessment tools or materials may not provide appropriate goals for the child. More definitive measurable statements should be designed (e.g., Johnny will be able to read Level 5 books in the Merrill Reading Series by June and will complete vocabulary, comprehension, and written language tests of the series with 80% accuracy). The team members' concerns with the hard of hearing child's competence in speech, language, and language arts also can be expressed in specific instructional techniques as well as steps for a child to take to measure his or her own growth.

Many professionals advocate designing goals for handicapped children in four discrete areas: (a) academics, (b) behavior, (c) socialization, and (d) communication. Hard of hearing children can benefit from such a demarcation of goals since their handicap affects all areas. Frequently, team members focus upon goals in academic areas of language arts, mathematics, social science and, perhaps, ancillary areas of art, music, and physical education. Obviously these are crucial educational areas and should be addressed in detail. Communication skills, both oral and written, are assessed by both speech-language pathologists and special educators. The delineations of communication goals are addressed in most IEP's for hard of hearing children as the vehicle for providing special services.

Assessments of behavior and socialization are frequently not undertaken; goals are not included in the IEP and these areas of individual growth and life skills are relegated to secondary importance by team members. Assessment and goals in these areas are more difficult to design, less objective, and extend the expertise of team participants.

When assessing the hard of hearing child's behavior, prior to designing goals and objectives in this area, it is important to include a description of the child's patterns of coping with frustration, interaction with adults and peers, willingness to ask for assistance, disruptiveness or acquiescence, etc. The psychological profile of adult hearing impaired individuals often accentuates passive, nonaggressive personality traits; however, hard of hearing children may not demonstrate such behaviors. Family involvement and interaction with the schools may be most important in this area of intervention, if needed.

Socialization assessments have been described in Chapter 5. In order to upgrade services to hard of hearing children, it is mandatory for team members to be aware of the difficulties the child may face, and to design intervention strategies for assisting him or her in coping with isolation and social stress. Goals and objectives in this area should be included in the IEP and monitored and reviewed annually.

Placement

An underlying principle of Public Law 94-142 is to place handicapped children in the least restrictive educational environment. By definition, hard

of hearing children as a group are assigned to regular education settings. However, special considerations relative to the age of the child have been noted (Torres, 1976b).

Preschool Issues

The regulations of the law include handicapped children ages 3 to 21 years. The preschool age group has been accorded special considerations and funding allocations in keeping with the concept of early identification and intervention. Placement considerations for 3 to 5 year old hard of hearing children present difficulties for local school personnel. The details of an appropriate preschool setting have been presented in Chapter 3; however, it is necessary to emphasize some problem areas.

In the United States, there is a lack of a universal mother-child health care system, and early identification of hearing loss is not automatic. When hearing problems are identified by medical centers, public health facilities, or schools for the deaf, the human service agencies of a locale become involved. When the child reaches age 3, the local school district is charged with determining appropriate preschool services. Frequently, preschool services are available on a contractual basis with the local Head Start program, a public or private nursery school, or a segregated preschool for handicapped children administered by the school district as part of the special education program.

Hard of hearing preschool age children in need of early intervention and education can participate in a variety of service delivery models. However, it is important to review the underlying philosophical approaches of each specialized setting, and to evaluate the restrictiveness of each program option for very young children. The speech-language pathologist may need to visit local preschool programs and assess their appropriateness for individual hard of hearing children. Financial constraints, reimbursement protocols, staffing patterns, parental needs, and transition to regular education settings need to be considered prior to placement of the very young hard of hearing child.

When a child is placed in a preschool program which is part of the local school district's special educational program, the IEP is designed by school based personnel with related service providers included in the team meeting. If the child is placed in a special preschool setting (integrated or segregated) outside of the administrative confines of the local school district, it is necessary for someone within the school district to participate in the writing of the IEP for that child. The overriding issue is to select a placement for a preschool age hard of hearing child which affords the child those special educational and related service options necessary for him or her to participate in a regular education program in the future, i.e. movement to the next least restrictive environment. The speech-language pathologist can serve as the liaison to such out of district preschool settings for the hard of hearing 3 to 5 year old child.

Modified vs. Restrictive Placement—Elementary School

The continuum of services required by elementary school age children varies regarding the extent of time spent out of the regular classroom. On this question, the Massachusetts placement system can serve as a model (Program Audit Committee, 1977). For example, some hard of hearing children do not require or receive special education services outside the regular classroom; they depend on amplification. Clearly, such children may need assistance in the classroom which should be monitored by the regular classroom teacher in consultation with a specialist (i.e., the speech-language pathologist).

Other hard of hearing children may need to leave the regular classroom for speech therapy several times per week. If the time they spend out of the classroom for remedial services is less than 25% of the school week, their placements are designated as *modified*. If the children require remedial speech therapy and special educational services to improve language arts or any related services that require absence from the regular classroom for between 25 to 60% of the week, the placement is considered more *restrictive*. Some local education agencies use segregated classrooms for hard of hearing children, but this placement does not meet the intent of the least restrictive environment provision of the law and should be reviewed and altered when appropriate. The overwhelming majority of hard of hearing children can succeed in placements that permit a range of special education services to be provided within the 25 to 60% limit.

Final placement decisions for individual children are the outgrowth of IEP team decisions. For example, the child for whom achievement objectives include speech conservation, articulation therapy, lexical expansions, and syntactic structure may require speech services for a total of only 2½ hours per week, or ½ hour per day. This child can be part of the regular class program for all curricular subjects, academic and nonacademic, and can receive speech and language therapy to meet the objectives during selected study or other time periods.

More complicated schedule decisions arise for the child who requires more expanded special educational services and speech and language therapy. This child, depending upon grade placement, may have to receive services during some part of the regular class curriculum. At all times, it is important to distinguish the value of the special education services that remove the child from the regular classroom. Although individualized language arts programs may appear to be needed by a hard of hearing child, it is necessary to determine the relative values of individual and class instruction for him or her.

The child who is not present in class for interactions between the teacher and his or her peers is still learning in a different style from that of the nonhandicapped child. Nuances, directions, responses, repetitions, and teaching style may be absent in the resource room or different from those found in the regular classroom, even if the grade level material is similar.

Most regular classrooms, particularly at the elementary level, assume variation in achievement levels among the 30 children of almost 2 to 2½ grade levels. This range among the children enables teachers to "group" within the classroom for different academic areas according to skills.

In classrooms where individualized or small group techniques are used for each subject area, it is feasible to accommodate the hard of hearing child. Language arts tutorials can address preteaching and remediation without requiring extensive removal of the child from the regular classroom. A useful guideline for equating individual versus class instruction is 1 hour per day of special education or related services equals removing the child from the regular classroom 1½ hours. IEP teams should review the use of generic or consultative teacher models to assist the regular classroom teacher to modify the program for the hard of hearing child.

Secondary Level Placement

Hearing impaired secondary level students require additional placement considerations because most secondary programs are departmentalized. Each student has four or five different teachers, excluding special services. The coordination of information by the team leader, the IEP preplanning conferences, evaluations and assessments, quarterly reviews, and decisions on all curricular levels are complicated by the number of faculty members and personnel involved. The hard of hearing child in secondary school requires different programing options and different objectives than the elementary child. A typical IEP process on the secondary level involves guidance personnel, special education teacher, speech-language pathologist, and an administrator who does the planning with selected contributions from teachers.

The secondary level includes the junior high or middle school years; they vary from community to community in program offerings and physical environment. However, the students served by the typical junior high school are at an age that is difficult for all children and especially for those who are handicapped. During these years, the IEP process must focus upon peer relationships and socialization skills as well as academic concerns (Ross, 1978). It is not unusual to observe children rejecting FM units, skipping speech therapy or special education tutorials, and rejecting the personnel who attempt to provide special services. Thus, teams of parents and professionals require added sensitivity in making recommendations.

Typical adolescents in junior high school reject being separated from or segregated in classes or identified as "special," even in dress. The IEP team must enhance the adjustment of the junior high age hard of hearing student to minimize the visible difference between him or her and normally hearing students. The transition from the smaller elementary school to the larger junior high school and then to the even larger high school means changes in personnel and the number of personnel with whom the hard of hearing child must interact. Transition meetings between teachers at elementary and secondary school levels for special needs students provide a mechanism for reducing the student's difficulties during the initial school year period.

It is important to stress that the IEP team should include the child, when appropriate (Torres, 1977b). Students over 14 years of age should be invited to attend the conferences planning their educational placements to provide needed and valuable information to the team members. Secondary school hard of hearing students are knowledgeable about their needs and able to participate in the planning of objectives and services that determine placement. Patterns of direct service to the secondary student center on maximum use of study periods, reducing the number of subjects taken each semester to make time for special services, and grouping (tracking, phasing) in individual subjects to permit broad exposure to different curricular offerings with ample individualization within academic subjects. Today, secondary schools offer expanded options for students, such as home economics, mechanical drawing, theater arts, culinary arts, and vocational or career courses. The hard of hearing student should be permitted to participate in the full range of curricular offerings at the secondary level, by choice.

Parents of secondary students bring concerns to the IEP process which are somewhat different from those of parents of elementary students. At this stage, parents view the school as providing access to higher education, vocational training, or, indeed, a trade or vocation that will lead to a job upon graduation. Preplanning conferences, the IEP team conference, and the yearly review should focus on issues related to the completion of schooling from the parents' perspective. Special education programs at the secondary level are primarily tutorial in nature. Phonological speech therapy may be less likely to improve the articulation errors that were apparent throughout childhood.

The problem areas of secondary placement can be viewed as requiring team members to have different skills. During the elementary school years, great emphasis is placed upon devising appropriate, measurable objectives which, when reached, enable the hard of hearing child to be placed in a less restrictive environment and to spend less time receiving special services. The secondary student requires consideration during the IEP process in order to effect sequenced plans for educational options for the future.

GUIDELINES FOR GENERAL OBJECTIVES

The following guidelines are offered as a review of important areas for each hard of hearing child in the IEP team meetings. (For a checklist of specific items, see Chapter 9.) The legal mechanism for providing services to children is the written education program; if services are not included in the written education program, they may not be provided to parents and children.

1. Ongoing audiological assessment, followup, and monitoring provided to the child through special personnel or referral: Referral sources should have an identified liaison in the school, typically, the speech-language pathologist in the role as team leader.

2. Modifications of the language arts curriculum for elementary school age children enabling teachers to expand the use of visual teaching aids: Classroom teachers may require assistance in examining alternative materials (especially linguistically oriented basal reading series) to teach reading.
3. Monitoring of student achievement through consultation in academic subject areas to provide intervention in these areas before significant problems arise.
4. Speech and language services provided to hard of hearing children to expand all the dimensions of oral language (semantic and syntactic abilities) as well as the more traditional phonological correction.
5. Coordination of services to secondary school age hard of hearing students that enables all teachers to gain insight into the problems of hearing impairment and the need for modifications of the curriculum, depending on the subject areas.
6. Assessment protocols that reflect the experience and training of personnel in applying the principles of developmental assessment.

These guidelines can assist teams to develop effective IEP's for the range of problems presented by hard of hearing children. Many issues complicate the IEP process for each child: the severity of the hearing loss, the breadth of program options within the school, the expertise of the team members, the inservice opportunities for staff members, the geographic relation to resources, and the significance of the parents' involvement (Nober, 1978). These quantitative and qualitative issues continue to be addressed by professionals as greater experience with the IEP process evolves. Interested professionals and parents can avail themselves of a wealth of resources and literature to facilitate the solution of problems in specific locales (see suggested reading list).

SUMMARY

Implementation of the regulations of Public Law 94-142 regarding IEP's should result in ongoing, effective direct services to hard of hearing children during their school years. The legal mechanism and vehicle for assessment and service is the IEP process (Dublinske, 1978). The low incidence handicapping conditions, such as hearing impairment, are subject to a less well defined approach to IEP development than other handicapping conditions. The hard of hearing child may not receive services (educational and related) unless school systems expand programing options and referral avenues.

Because almost all placement decisions for hard of hearing children are within regular education classes, expanded inservice education for regular classroom teachers is needed so that identification, assessment, and placement issues for the hard of hearing child can be addressed within the provisions of the law (Nober, 1977). Modifications of current regular educational classroom procedures are the preferred avenue for providing education for

the hard of hearing child, with appropriate support from special education, speech/language therapy, and audiologic services.

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Review, Overview, and Other Educational Considerations

MARK ROSS

This chapter has several purposes. The first is to relate and embellish some of the material already presented in order to provide the reader with a review of the important educational considerations from, perhaps, a slightly different personal perspective. The second purpose is to present and discuss certain other important educational considerations which have not been covered in the preceding chapters. I have, whenever pertinent, critically analyzed the goals and assumptions implicit in our professional activities with children. This attitude, in my judgment, is important for all professionals who work with hard of hearing children: to take; progress will not come about because of our ardent wishes but because we are able to effect needed changes in children. The uncritical acceptance of the status quo implies little analysis of our efforts or ourselves, thus precluding the prerequisite condition for such changes.

REVIEW AND EXPOSITION

Criteria for Success

The need to clearly define our goals has been stressed in several chapters. We must know where our therapy/educational endeavors with a child will lead and we must have clearly specified means of judging the degree of our success. Under Public Law 94-142, we are required to specify our therapeutic intentions. As I view this requirement, it is a reaction to the very common practice of being unable to specify progress in particular areas beyond such fuzzy statements as, "This child has shown improvement." However, astute professionals for years have organized their teaching/tutoring practices around the comprehensive evaluation of a child and have

specified their goals and methods of assessment. The current requirement, in large part, simply codifies our best previous practices. We should be aware, therefore, that Public Law 94-142 does not imply that everything we have done in the past was inadequate nor, more important, that children in the "new era" will automatically receive superior services than in the past. The law is simply an opportunity, not a guarantee.

I suggest that each of us keep a critical perspective on the limitations of his professional area when fulfilling the accountability requirements of the law. Goals should not be trivialized to the point of absurdity nor made so broad that they are essentially meaningless. There are, for example, an infinite number of sentences that can be generated using the English language rule system; in setting goals in this area, one should look for the child's ability to make productive use of one of the relatively limited number of rules that accord with his developmental level, rather than defining "improving communication" as the goal of therapy.

We should also recognize that some aspects of a child's educational performance, such as much of the creative process, inferential reasoning, and the ability to combine material/information in a unique configuration, currently defy "objective" description. The danger is that we may simply ignore the reality of these important dimensions because we do not know how to measure or quantify them for IEP purposes. Professional personnel working with hard of hearing children should not be so pressured by the constraints of "objective accountability" as to substitute in their therapy goals picayune but measurable dimensions, for significant, but unmeasurable ones.

I have been struck, too, by the sometimes arbitrary, sometimes ignorant, and sometimes magical way goals and success criteria are included in an IEP. A child may display a morphological problem by being unable to use the /s/ morpheme to indicate possession; the evaluation/placement team may decide that it is a reasonable goal to expect the child to use the morpheme correctly 80% of the time at the end of the year, as judged by some standardized test or locally defined procedure. This requirement looks and sounds good and the team may leave the meeting very content with themselves. However, in this particular example, one should know that a phonological law requires that the /s/ morpheme be pronounced as /s/ after a voiceless sound, as /z/ after a voiced sound, and as /iz/ after a fricative. If the child cannot make these phonological contrasts, then a further delineation of subgoals is necessary. It may be that the wrong goal was selected. Furthermore, the possessive pronouns—*his*, *her*, *her's*, *their*, *their's*, *mine*—should be sequenced along this same set of subgoals because the same concept is involved.

Clearly, then, the criteria used to set and sequence goals are an important consideration and one that requires, as it always has, the intercession of a competent and knowledgeable professional. Putting numbers on a piece of paper (the IEP) does nothing in itself to improve a child's performance. I am concerned, and have already seen some indication, that the clerical requirements of the law may be emphasized at the expense of the reality—

the child's performance. It sometimes seems to me that many professionals see writing the IEP as the complete process; that is, the statement of the goals becomes an end in itself, as if the words take on a magical quality and become the reality.

There is, in brief, no substitute for well trained, competent professionals when they are evaluating a child, setting goals and success criteria, making placement recommendations, interacting intelligently with colleagues and parents, and, most important, actually improving a child's performance with good teaching.

Pre- and Postteaching

I have not met many hard of hearing children who do not require at least some preview of academic material and a review of the content presented previously. This need is not superficially evident. Unless one intensively and sensitively evaluates a child in many academic and nonacademic situations, it is easy to overestimate his capacities. Many hard of hearing children can effortlessly engage an observer in conversation and show absolutely no difficulty in comprehension or expression. It is only when specific demands are made upon a child regarding some vocabulary items, or when he is asked to draw inferences from written material or to comprehend highly transformed complex oral and written sentences, that his deficiencies become apparent. Then, he may demonstrate an inadequate mastery of more subtle and complex syntactical constructions, a relatively restricted vocabulary, and an inadequate grasp of the multiple meanings of words, synonyms, and idiomatic expressions. I stress again that these deficiencies may not be superficially apparent; a probing examination is required to determine the child's status in these areas.

We do not have, as Chapter 4 indicates, tests of oral and written language competency that can precisely pinpoint all of a child's problems, particularly those of the older hard of hearing child. It is necessary, at first, to simply assume that the child must be scheduled for pre- and postteaching. In the course of these activities, the skilled speech-language pathologist with a sophisticated grasp of psycholinguistics will uncover many of the child's problem areas. This information then serves as the basis for intervention. This kind of procedure—the "nonstandardized approach to the assessment of language behaviors"—has recently been described by Leonard, Prutting, Perozzi, and Berkley (1978) and by Kretschmer and Kretschmer (1978) and is highly recommended.

A good beginning for preteaching activities is to assess the child's knowledge of the specific vocabulary items in lessons which will be presented shortly to the child. Not only the superficially difficult or new vocabulary items should be checked but, also, any word or expression that cannot be decoded literally (i.e., metaphorical, rhetorical, idiomatic expressions or indirect discourse) should be reviewed with the child. The goal of preteaching tutoring is to prepare the child to profit from regular classroom instruc-

tion in which the teacher presents academic material to the entire class. The child's comprehension of content should, however, be verified during the postteaching sessions. Both pre- and postteaching can occur in the same scheduled session. Whatever the goals of the session, the clinician/teacher would be wise to keep them precisely in mind. It is not a very good therapy/tutoring practice to diffuse the goals of the session by mingling and overlapping preteaching vocabulary expansion, content postteaching review, and correcting misarticulated phonemes or general language deficiencies as they occur. Both the child and the clinician/teacher should know what the goals of the period are.

A frequently underestimated preteaching goal is the assessment of the language of directions. Often, the directions used to instruct a child in a task contain more complex language than the tasks themselves. These directions may not be a problem for normally hearing children but they definitely are one for hard of hearing children. I have seen many instances wherein hard of hearing children were perfectly capable of completing a task but simply could not understand the verbal (written or oral) explanations of the task. This kind of situation occurs frequently with all hearing impaired children when they are given any type of test (academic, intellectual, psychosocial, etc.), and is partly responsible for their deficient performance. The problem is exacerbated with tests in which language status is not the stated goal of the evaluation (e.g., personality tests and performance tests of intelligence).

Auditory and Visual Dependence

Some years ago, during the course of a study (Ross, Giolas, & Carver, 1973) in which speech discrimination scores of hard of hearing children were compared under both hearing aid and FM auditory training system conditions we made a very interesting observation regarding their auditory behavior. During the hearing aid condition, when the children were required to write the spoken word, they kept their eyes on the examiner, who was 8 to 14 feet away, waited until the word was spoken, and then wrote their response. When an FM auditory training system was used to transmit the spoken word stimuli to the children, their response behavior was quite different. They kept their eyes on the paper, not on the experimenter, while waiting for the stimuli to be presented.

The same results were found in another study (Kessler, 1977) that required the children to point to the picture signified by a spoken word or phrase. For the hearing aid condition, the children kept their eyes on the examiner during the stimuli presentation; for the FM condition, they kept their eyes down on the paper and made their choices after the verbal stimuli were presented. What was happening was that the children soon learned in which condition the additional cues provided by lipreading the speaker were required, and in which they could depend on their hearing entirely, dispensing with the added visual cues. (The test scores in both studies

avored the FM condition.) One can observe similar behavior in normally hearing persons. During oral presentation of material in relatively favorable acoustic circumstances they may or may not observe the speaker because they can understand him perfectly well either way; during less than favorable acoustic conditions, however, normally hearing persons also try to use their vision to complement the imprecise auditory cues (Neely, 1956).

The key consideration for both hard of hearing and normally hearing persons is the clarity of the acoustic message. If, for the hard of hearing individual, complete comprehension can be obtained by processing the acoustic signal alone, then this will be the preferred communication channel under the existing conditions. If the acoustic signal is too distorted for complete comprehension of the message, then the hard of hearing person will complement or replace his insufficient acoustic cues with visual ones. Since the acoustic circumstances facing the overwhelming majority of hard of hearing school children are considerably less than optimal, it follows that we have been forcing these children into unnecessary, and even undesirable, primary dependency upon the visual channel for communicative purposes.

I hasten to state that I have no objections to the complementary use of the visual channel by hard of hearing children. The key word here is *complementary*, which means "to fill out, complete, or supply a lack." Inasmuch as the auditory channel is, in reality, insufficient for complete comprehension in some situations for most children and in all situations for those who are severely hearing impaired, then optimizing the visual cues should be an explicit goal in many instances. I object when children are forced into depending upon lipreading as a substitute channel because the auditory management is improperly handled. I object to the many "hints for teachers" that focus on optimizing the visual circumstances (well formed lip movements, light on the speaker's face, etc) but de-emphasize or ignore the exploitation of the more powerful auditory channel. The sequence of events I stress is optimization of the acoustic circumstances *first* and *then* the complementary use of vision to fill in any gaps remaining in the message.

The optimization of the acoustic circumstances is easier said than done. (Many of the key considerations have been covered in Chapter 2.) It must begin with early detection and early and relevant educational management, and it must include periodic audiological evaluations of increasing elaboration as the child grows older. Audiologists dealing directly with the child must possess a sophisticated appreciation of the normal course of speech, language, and cognitive development, acoustic phonetics, electroacoustics and troubleshooting of auditory amplification devices, and classroom acoustics. They must be competent to select the appropriate amplification system for different educational circumstances, make monaural/binaural decisions, and interrelate all the factors for each hard of hearing child.

There is one simple technique that helps to maximize the use of residual hearing; it can be applied by anyone who works with hard of hearing children. Basically, it is to get closer to the child or to the microphone of his amplification system when talking to him. The potency of this simple pro-

cedure should not be overlooked. Consider, for example, Table 1. Assumed in the table is a noise level of 60 dB SPL, fairly equally distributed throughout the room. This high level of noise is not unusual; most studies on this topic have shown noise levels equal to or exceeding this level (Ross, 1978). The next assumption is the average intensity level of speech; the closer to the speaker the speech level is measured, the greater is the sound pressure level. In a free field or anechoic chamber, the sound pressure level would diminish 6 dB with every doubling of distance; the better the acoustical treatment in a classroom, the more nearly this inverse square law will apply. The figures given in Table 1 can be considered approximately correct. Note the resulting signal to noise ratios at different distances. The closer a teacher comes to the child (or the microphone of his auditory training system), the higher the resulting signal to noise ratio. It is a vitally important consideration. If a child cannot clearly distinguish speech signals from the noise, he will not be able to decode all the meaning present in the speech signal. The signal to noise ratio is, perhaps, the most important electroacoustic consideration underlying the development and understanding of speech for the majority of hard of hearing children.

The same positive signal to noise effect does not occur if a teacher simply raises her voice while talking to a child. This behavior merely increases the sound pressure level of the vowels relative to the consonants. Increasing the vowel/consonant intensity ratio is more detrimental than helpful to speech discrimination. The highest signal to noise ratio can be obtained, and the speech signal itself least distorted, if the speaker wears a microphone around his neck so that it is about six inches to one foot from his mouth, and he talks in a normal conversational voice.

Psychosocial Adjustment

The psychosocial adjustment of hard of hearing children has not received much attention in our literature. Many articles and research apparently dealing with this topic pertain, in fact, to deaf children and use educational placement (day, residential, or mainstreaming) and family characteristics (with or without deaf parents, etc.) as the major variables. The hard of hearing child presents his own constellation of characteristics and problems and must be dealt with on his own terms (see Chapter 5).

It is not an easy task to uncover the psychosocial status of a hard of hearing child. Yet, speaking as both a parent and professional, how a child feels about himself and how he deals with his peers takes on an importance that far transcends the purely academic (although, of course, one's self image reflects, to a certain extent, one's academic and other accomplishments). The communicative problems imposed by a hearing loss must have some impact upon a child's ability to relate to his peers and, thus, they influence his psychosocial adjustment.

I see this dimension as one that requires the attention of all persons concerned with educational programing for the hard of hearing child. No

TABLE 1

**Speech/Noise Ratios at Six Different Distances of Speaker from
Child or Microphone**

	<i>Distance from Source</i>					
	<i>6 Inches</i>	<i>1 Foot</i>	<i>2 Feet</i>	<i>4 Feet</i>	<i>8 Feet</i>	<i>16 Feet</i>
Speech SPL	84dB	78dB	72dB	66dB	60dB	54dB
Noise SPL	60dB	(constant throughout room)				
Speech/Noise Ratio	+ 24dB	+ 18dB	+ 12dB	+ 6dB	0dB	- 6dB

IEP should be considered complete unless there has been a sincere attempt to evaluate the child's psychosocial status. Furthermore, when problems and deficiencies are apparent, explicit attempts must be made by all the concerned persons to improve the situation. Our colleagues in psychology, counseling, guidance, and social work should be consulted and brought into the IEP process.

It is apparent that many difficulties in getting some hard of hearing children to wear hearing aids, particularly the more visible FM auditory training systems, relate more to the psychosocial than the auditory sphere. We have had some older children who agreed that hearing aids and auditory trainers helped them considerably but, nevertheless, who refused to wear them—because of appearances. These children are telling us that they do not accept themselves as they are. They see the amplification device as an alien intrusion and not something that is part of their body image, as it should be. The invisibility of the hearing loss, with the consequent apparent awkward inconsistencies in the child's behavior, distorts both verbal and nonverbal interaction patterns. A hard of hearing child does not know what "normal" is; he does not know what he should be hearing. He cannot relate the help he gets from a hearing aid or auditory trainer to any normal frame of reference. We can minimize this confusion by fitting the child very early with amplification, by making sure that it works properly, consistently, and continually, and by helping all the persons (initially the parents) involved with the child to come to terms with the hearing loss. The child must be taught to view amplification devices as an important part of himself and to deal with his normally hearing peers on this basis when questions arise (as they will).

Some steps can be taken to help improve the social climate in the schools and in the child's psychosocial adjustment. Normally hearing children (as well as adults) find it difficult to empathize with an individual who has a hearing loss. Orientation materials are available that can help to foster

understanding of the implications of a hearing loss (Nober, 1977). Records and tapes that simulate different types and degrees of hearing loss are also available (see Nix, 1976). Demonstrations with these materials have proved to be an effective technique to develop in nonhandicapped students an empathic awareness of a hearing loss. Some of the tape recordings illustrate the effect of environmental noise and distance upon speech processed through a hearing aid; these tapes, too, have proved to be very effective. As part of the orientation program, the speech-language pathologist and/or the educational audiologist can pass out hearing aids and auditory trainers to the children and show how they work. The premise of these procedures is that we can improve the social climate in the child's classroom by dispelling some of the "mystery" and confusion attendant upon a hearing problem. Such a program can be regularly scheduled as part of a social studies or health curriculum, thus not making a particular child the focus of all this concern. However it is handled, it must be accomplished sensitively but in a superficially didactic manner. We do not want the hard of hearing child to be pitied or patronized; our goal is to help his normally hearing peers simply to accept the hearing problem as one of the multitude of dimensions that differentiate us all.

For older hard of hearing children, particularly those entering adolescence, a more personally oriented approach is often necessary. The majority of these children are isolated from other hard of hearing children and, usually, their friends have normal hearing. The hard of hearing children are sensitive about their hearing loss and use of amplification, and they are acutely aware that their friends are not hearing impaired. No matter how well they have adjusted to the hearing loss, some self examination, questions, resentments, and anger are likely to surface during this period of their development. Suddenly, the "very well adjusted" child may reject amplification or evince hostility to his parents, blaming them for his "difference." My colleagues and I have found it very helpful to organize "rap" sessions with these youngsters; we give them the opportunity to meet with other hard of hearing children in the same age bracket (which often requires the cooperation of other schools or school systems) and to exchange experiences and feelings with each other. At the same time, in a different room, the parents can meet with each other and voice their own concerns. It is essential that someone skilled in group dynamics be involved with both groups and that a professional who understands hearing problems is on hand. Ideally one person often may serve both functions.

Other techniques can be used to help improve the psychosocial status of a hard of hearing child, such as assigning a "buddy" to him, emphasizing his strengths publicly, and so on. We must do whatever it takes. Our concern with the psychosocial dimension is not a luxury, not a kind of bonus consideration superimposed upon reading, writing, and arithmetic; the hard of hearing child's personal adjustment permeates and influences all aspects of his life, including the academic and, therefore, justifies our focus on this problem in school.

OTHER EDUCATIONAL CONSIDERATIONS

Speech Reading and Auditory Training

The terms *speech reading* and *auditory training* have not appeared very much up to this point. I shall be very content if we never see them very much, particularly when they are applied in an unqualified fashion to instructional "prescriptions" for hard of hearing children. To those readers who were trained in a traditional mode, this statement undoubtedly smacks of heresy. If we cannot give the kids "speech reading" and "auditory training," then what can we do? For many years it has been traditional for the speech-language pathologist to invoke these terms when recommending and instituting a therapy program for hearing impaired children (thus impressing colleagues who knew even less about what they signify than he did). The practice may be understandable from a historical perspective but, in my judgment, any current emphasis on these two concepts in isolation has very little scientific or clinical merit. Let me give my reasons for these apparently outrageous statements.

First, it is necessary to recall that we are dealing not with deaf but with hard of hearing children. Therefore, we are dealing with a different population than the one for whom the concepts were originally developed. The children we are concerned with already use audition as their primary communication channel. The "auditory training" they need is an amplification system that can "package" an incoming relevant language signal into their residual hearing in an optimal fashion. Certainly they require such experiences more frequently than normally hearing children; the difference, however, is simply a question of degree and not type. The "speech reading" training they need is advice and encouragement to watch the face of a speaker when the acoustic circumstances prevent reception of a completely intelligible signal.

The stated goal of traditional "auditory training" exercises was to improve, eventually, a hearing impaired person's ability to understand auditory messages. As far as the hard of hearing child is concerned, we have to be assured somehow that breaking speech down into phonetic components will eventuate in an improved ability to process language auditorially. We have no convincing evidence that this improvement is possible, much as the concept appeals to us. There is even less evidence and less logic, in the practice of using various noise makers and certain auditory dimensions (pitch, loudness, duration, etc.) as entrees to auditory language comprehension for the hard of hearing child.

Auditory training for the hard of hearing child is inextricably bound to the entire process of speech and language development. Generally, the only time a "period" should be set aside for specific "exercises" is when it can be demonstrated that the child cannot auditorially make a phonological distinction for which he possesses the auditory capability. This kind of situation may occur when a child is detected and fitted with hearing aids at a relatively advanced age; or when he had been previously using improperly

adjusted hearing aids; or, for some severely hard of hearing children, when the auditory cues do not possess sufficient saliency to be developed without an explicit focus during training. However, even these exercises must be placed within a language and communication matrix as soon as possible and not viewed as isolated auditory exercises. "Auditory training" should never be thought of or scheduled as an entity divorced from the entire process of language and speech communication. In my experience, most hard of hearing children possess much more auditory potential than is reflected in their use of audition for communication purposes.

My feeling toward "speech reading" for the hard of hearing child is even more reserved than that toward "auditory training." As I indicated previously, I do not approve of the visual emphasis and of the potentially visual dependency that this term implies. For the hard of hearing child, speech reading should never be more than a complementary avenue, albeit a very valuable and necessary one at times. Therapists who schedule hard of hearing children for purely lipreading exercises are functioning in an intellectual vacuum.

Speech reading for the deaf child is an avenue for both the development and recognition of language. One of the most significant relationships to lipreading for deaf children is their language status; the children who can demonstrate better language skills are usually the better lipreaders. This is not surprising because the language message transmitted by the lip movements must be understood by the receiver. (An illustrative example would be the attempt by a normally hearing person to speech read a foreign language in which they have only minimal skills.) The process is different for the hard of hearing child (and adult). For them, language development is auditorially based. The task for them, in pure lipreading, is to recognize the lip movements that are related to the language they already have developed through the auditory channel. There are, and should be, very few occasions when a hard of hearing person must depend on lip movements entirely for communication purposes. Since, for him, the lip movements are virtually always accompanied by an auditory message (except in instances of nonfunctioning aids or intense environmental noise masking), the process of receiving information is quite different from that faced by a deaf person. When the hard of hearing child needs speech reading cues it is always in a complementary relationship to audition rather than as a primary avenue. We should not confuse these two purposes.

Time and Money

At first glance, one would hardly think that these two concepts are appropriately subsumed under the major heading "Other Educational Considerations." With some reflection, however, its relevancy soon becomes apparent. In our society, it takes both time and money to educate children. Although an abundance of both will not guarantee improved educational performance, their severe scarcity probably will decrease accomplishments, particularly

for our special needs children. But how, one can ask, is this point relevant in this new era of Public Law 94-142? Isn't there going to be a lot of money coming down the pike from our friends in Washington? Let us consider the relevancy of the point.

Both Nober and I have had extensive experience with Chapter 766, the law in Massachusetts that is a precursor of and very similar to Public Law 94-142. Thus, our experiences within this state (as well as elsewhere) can be applied to what we are now experiencing nationally. The first impression one receives in complying with the law is of the procedural complexity and safeguards built into the process of formulating and implementing an IEP (see Chapter 8). The law's intent is clear: Special needs children must be given more than just a minimally adequate education, and it must take place in the most normative setting possible. We have not heard anyone question the intent of this law, nor do we. When one tries to implement it, however, the procedural requirements can prove to be extremely time devouring. I am not questioning the necessity of the IEP process built into the law; I am simply making the point here that the process takes time—a lot of it—more, I would venture to suggest, than the authors of the law were aware of at the time it was written.

The practical effect upon professionals who are attempting to comply with the law responsibly is that they are spending more time preparing for meetings, in meetings, and following up on meetings, than they have ever spent before in such activities. This time is *not* coming out of a lengthened school day; it is coming out of time ordinarily spent in preparation and in teaching children. I know speech-language pathologists, special educators, and other personnel who are spending considerably less time in direct services to children than they used to before the special education laws went into effect.

We are being required to identify more special children, evaluate them in more detail, collaborate formally with our colleagues regarding each special child, re-evaluate the children at no less than yearly intervals, and contact and consult with parents as full team partners. These are laudatory requirements but, in following them, we also may be subverting the intent of the law if the child now receives less direct services than he did before. This situation is precisely what is occurring in many school systems today.

The evident way out of this dilemma is to employ additional relevant personnel; with a reduced caseload for each, the requirements of the law can be met with no diminution of services to children. There is, however, one major complication to this simple solution: As this chapter is being written, the newspapers are full of articles of a national taxpayers revolt, patterned after and motivated by the passage of Proposition No. 13 in California. Whatever the merits of the case, there is little doubt that local taxpayers will not only not vote for increased local funding for schools but that they will take active steps to reduce the present rate. So where will the money come from to pay for the necessary increase in personnel if we

are to fully comply with the administrative requirements of the law without simultaneously reducing direct services?

It is true that Public Law 94-142 includes substantial funding allotments to state and local education agencies; this is new money and was not previously available through other programs. However, whether there will be sufficient funds both to take up the slack of reduced local funding and to implement the increased administrative requirements of the law is questionable at this time (particularly since a significant amount of the funds will be allocated to administrative echelons some steps removed from the children). It would be ironic, indeed, if our attempts to improve educational opportunities for special children resulted in a net decrease in direct services to them. Fortunately, those professionals involved in educating special children are very aware of this dilemma, and, with increasing experience in implementing the law, are working to resolve the conflict between time and money.

The Management Checklist

The management checklist reproduced as Figure 8 is an attempt to develop in the same instrument both a listing of services required by hard of hearing children and some rating of the service quality. The list of specific services is a compendium of items taken from my experience, the literature, and suggestions of colleagues and students. In the inservice project currently underway at the University of Connecticut, we emphasize to the participating public school speech-language pathologists that the services in the checklist are required by the mainstreamed hard of hearing children carried in their caseloads.

Not every item may be appropriate to every child although every one deserves explicit consideration. Two spaces have been left for services not listed. The items are meant to be perused by the IEP team and checked when they are considered to be appropriate for a particular child. Periodically during the course of the year (perhaps specified in the IEP), the speech-language pathologist checks to see whether the agreed upon services are being provided to the child and he assigns, whenever possible, a numerical rating to the quality of the services. The ratings vary from 1 to 5, with 1, the poorest; 3, average; and 5, the best.

Although a management quotient can be derived from the checklist, any attempt to attach great significance to any percentage derived is very premature. At this point, I view the checklist mainly as a list of items to be considered by the IEP team and as a structure by which the case manager can evaluate the presence and adequacy of services provided to the child by all the professionals involved, including himself. In respect to those items that require the speech-language pathologist to rate himself (quality of therapy, for example), I doubt if he or any of us could be completely objective about his own performance. A supervisor's cooperation would be helpful in these instances. Eventually, I hope, this checklist or one of its derivatives

will give us some numerical basis for judging the quality and quantity of management services provided for a particular child.

SUMMARY COMMENTS

One constant theme has permeated this monograph: that the needs of hard of hearing children and our responsibilities to them must be our transcending obligation. Our primary constituency is the children and their parents.

	Appropriate	Present	Quality* 12345	Total
1. Comprehensive speech and language evaluation				
2. Comprehensive audiological evaluations at agreed upon intervals				
3. Academic achievement testing				
4. Current psychological evaluations, including an individually administered performance scale				
5. Classroom observations by speech/language clinician at agreed upon intervals				
6. Availability of FM auditory training system				
7. Individualized electro-acoustic adjustments				
8. Daily troubleshooting of FM systems				
9. Daily troubleshooting of hearing aids				
10. Otological and audiological followup when conductive component or overlay is suspected				

FIGURE 2. Checklist for Identifying the Services Needed by a Hard of Hearing Child and Rating the Quality of the Services Provided.

11. Acoustical treatment of classes				
12. Functional vocabulary training				
13. Language therapy (syntax and morphology)				
14. Language therapy (inferential reasoning, problem solving)				
15. Speech therapy (phonetic/phonological)				
16. Pre- and postteaching (includes academic tutoring and academic based vocabulary)				
17. Notetaker				
18. Relevant staff interactions				
19. Orientation of staff to problems of hearing loss				
20. Orientation of children to problems of hearing loss				
21. Career counseling for older child				
22. Family contacts and counseling at agreed upon intervals				
23. Family involvement with home assigned tasks				
24. Other				
25. Other				
Total number of items appropriate and present				
Management quotient #Present (Total) _____ * #1 = Poor #Appropriate _____ = (PERCENT) = #3 = Average #5 = Superior				

FIGURE 2. (continued)

We are employed by our society to serve them, not our colleagues, our administrators, or ourselves. I am not making this 'preachy' point because I discern constant violations of these values among my colleagues but because all of us, occasionally, must be nourished by a reaffirmation of our professional responsibilities. Although this book is aimed primarily at speech-language pathologists, the point is relevant to all the professionals who bear designated (by the IEP) responsibilities for the welfare of hard of hearing children.

We are fortunate to be able to work with these children. Their prognoses are excellent; I know of no other "special" children with equally positive prognoses, provided we do what is necessary. The purpose of this publication is to supply an overview of the information and orientation required to achieve a positive future.

Information is easy to come by. We are inundated with textbooks and journals. Our desks and bookcases overflow with the reading we will "get to someday." We have stressed "orientation" as well as information throughout this monograph for a good reason: Without a proper orientation, that is, without a nagging sense of one's professional obligations, the information we have available will remain unread and undigested. The motivated professional, the one who keeps professional values constantly in mind, will seek out the easily accessible information. Values are a lot more difficult to inculcate—which is why we stress them.

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